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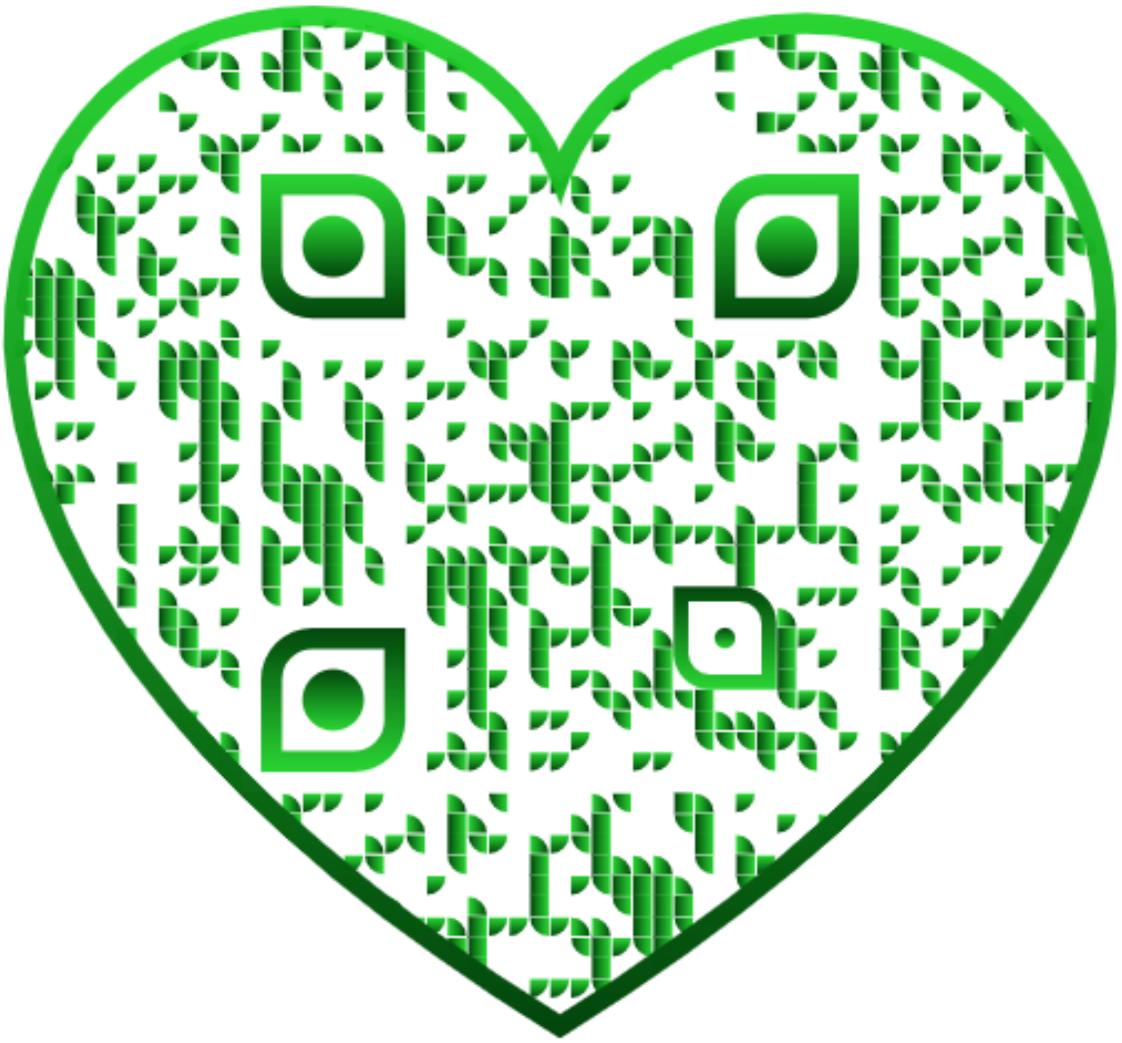

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MUSIC PRODUCER'S GUIDE TO LOGIC PRO

Welcome to the ***Music Producer's Guide to Apple Logic Pro***! Apple's amazing Digital Audio Workstation (DAW) has now become one of the most widely-used applications for music production in the world. This mainstay of Mac music making is the centre of a compositional universe that includes the more beginner-orientated Garageband and the all-new Logic Pro for the iPad, and we are celebrating this Logic wonderland with a special bookazine dedicated to the software at its core!

We are covering all aspects of Logic Pro music production, no matter where you are in your music making journey. We therefore have features on everything Logic Pro, from beginner guides to in-depth masterclasses. If you are new to Logic Pro, we have a special beginner's tutorial to kick things off (on p10) before we dive right in with the first of seven major masterclasses on music production using some of the in-depth features in Logic Pro (p16).

Logic Pro's recent appearance on the Apple iPad is certainly a mouth-watering prospect for all of us Logic users – can you really now make great music whenever and wherever you want with Logic Pro? We answer that and more questions in a special hands-on feature from p20.

Elsewhere we touch on some major aspects of Logic music composition, covering bargain beat programming on p34, Logic Pro soundtrack creation on p60, and how to get the best from some of the many third party softsynths you can use in Logic (p98).

We also have a huge selection of free plugins with this guide that you can use in Logic. It is the complete, world-famous *Computer Music* Plugin Suite and has synths, instruments, effects and a whole lot more across 80+ plugins you can download for free, right now – see p9 for more on how to do this. As if that's not enough, how about 12 packs of free samples – over 3,000 sounds in total – to download too? We run through all of these in a special feature on p120.

Add in interviews with high profile Logic users, plenty of buyer's guides and advice on the best third party plugins to run in Logic, and we think this special bookazine will really boost your Logic productions. It all adds up to the complete guide to helping you get amazing, professional-sounding Logic Pro tracks, no matter what genre of music you are in to, and it is all brought to you by the experts at *Computer Music* magazine.

I hope you enjoy the issue and happy Logic music making!

Andy Jones, editor

FUTURE

MUSIC PRODUCER'S GUIDE TO
LOGIC PRO

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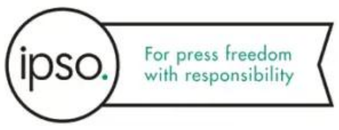

COMPUTER music Presents

MUSIC PRODUCER'S GUIDE TO LOGIC PRO

Hands-on workshops, in-depth features and step-by-step guides – everything you need to master Apple's Logic Pro!

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How To Use This Guide

Here's your step-by-step guide on how to make the most of this special Logic Pro bookazine. We detail all of the videos, software and tutorial files that accompany many of the features, all delivering a completely interactive Logic Pro experience!

> Many of the features in this Music Producer's Guide To Logic Pro are accompanied by audio examples and video files to help you work through them. All of these videos and audio files are available to download at www.filesilo.co.uk. Audio or sound files will indicate how certain production techniques will impact on the tune you are making or the sound you are creating, and the videos will guide you through many of the workshops in case you get stuck.

We have also included the world-famous *Computer Music* Plugin Suite, a set of over 80 instruments and effects that you can download and install into your DAW (either the Mac or PC version) completely free of charge. Many of these are mentioned in the features in this guide like the Soundtracking article on p60.

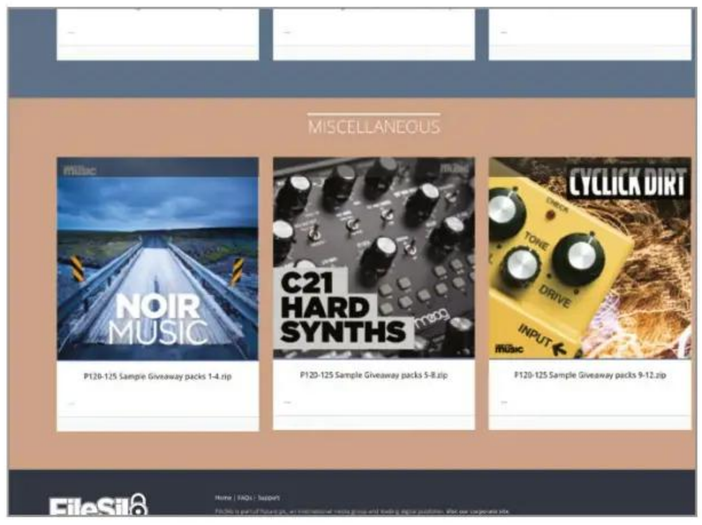
In order to access all of this content, go to filesilo.co.uk and select the Bookazines tab and find this issue. You will be presented with a main Tutorial Audio folder (for the audio example files) and Video Tutorials folder (for the example videos). The *Computer Music* Plugin Suite of instruments and effects is in the Software section and comprises instruments and effects for Mac or PC. Simply download the plugins for whichever type of computer you use. You will also be able to download your free samples in the Miscellaneous section – see opposite.

More detailed instructions on how to install the software instruments and effects are included on the opposite page. Enjoy!

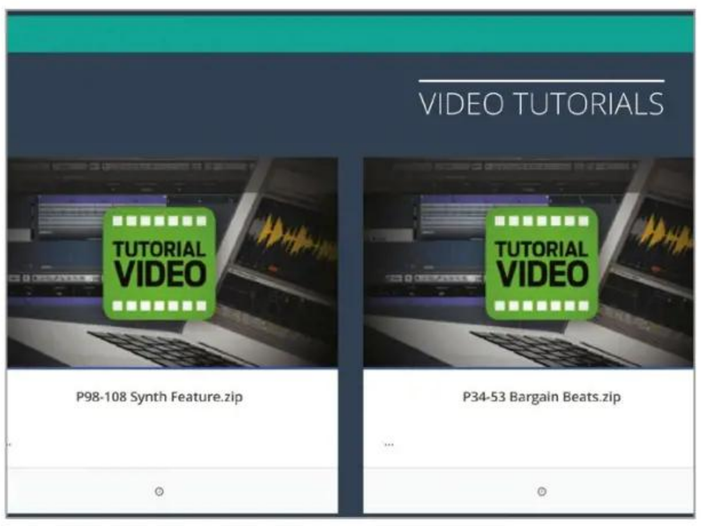
>Step by step Using FileSilo

1 > Head over to www.filesilo.co.uk. Here are a number of magazine brands and all the digital content associated with them for you to download.

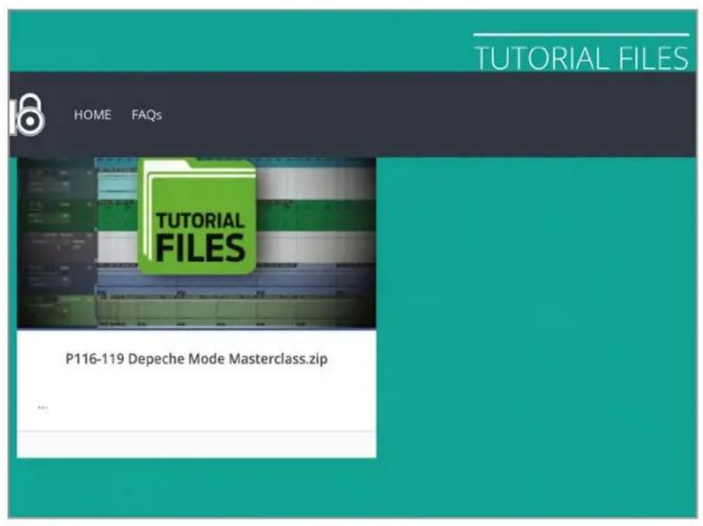
2 > Go to the Bookazines tab at the main filesilo.co.uk screen. Click this tab and you will see a list of recent Bookazines we have produced including The Music Producer's Guide To Logic. Click on this – it will have the same image as the cover of this bookazine.



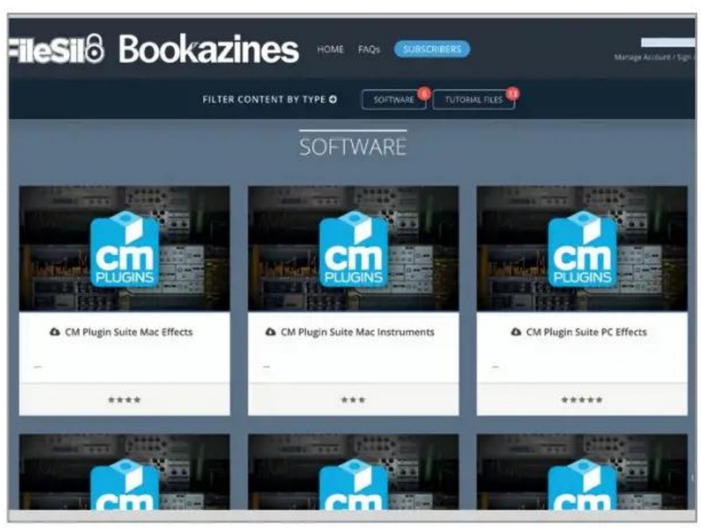
3 > Once you are in, scroll to the bottom to the 'Miscellaneous' section. Here you will find your free 3000+ samples to download, including all 12 packs as detailed on p120. You can use these in your own songs and apply some of our Logic techniques as you use them.



4 > In the 'Video Tutorials' section we have videos to go with our Bargain Beats feature on page 34, and our feature on softsynths from p98.



5 > In the 'Tutorial Files' section you will find example audio for our Depeche Mode 'sound like' feature on p116. Time to go back in time to the '80s!



6 > Scroll down and in the main 'Software' section you will find all of the plugins in the *Computer Music* Plugin Suite. These are listed as Mac or PC instruments and effects. There's also a guide to the suite as a downloadable PDF. You can find out more information about installing them on the opposite page.

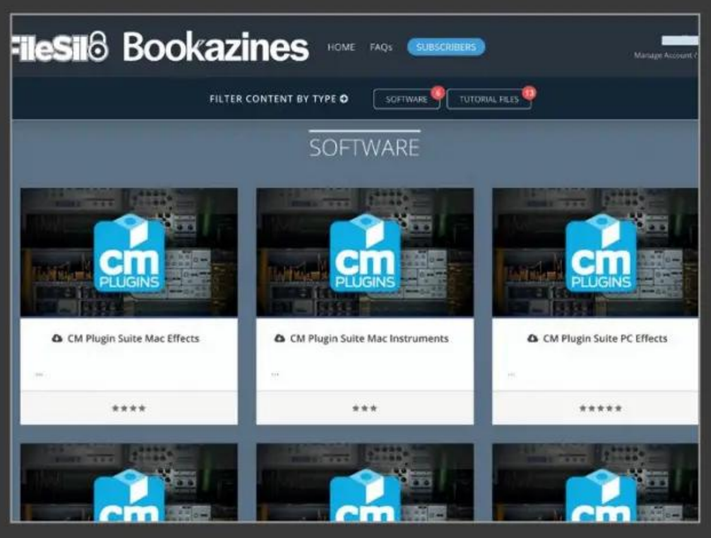
Your free samples

We have over 3,000 samples for you to download and practise your Logic skills with. Here's a quick run down of what you can expect...

We have over 3,000 free audio samples for you to download at www.filesilo.co.uk/Bookazines. Simply select the *Music Producer's Guide To Logic Pro* and scroll down to the Miscellaneous section which is usually at the very bottom. Here you'll find 12 free sample packs in three downloads. There are four free packs of synth samples, two Scandi-Noir packs, plus some rough bass samples, drum machine hits and dirt sounds. In short, you get everything you need to create entire pieces of music in Logic! All the samples were produced by our sample maestros Groove Criminals and Cyclick Samples. They can be used in whatever music productions you like and are copyright free. All we ask is that you don't redistribute the sample packs.

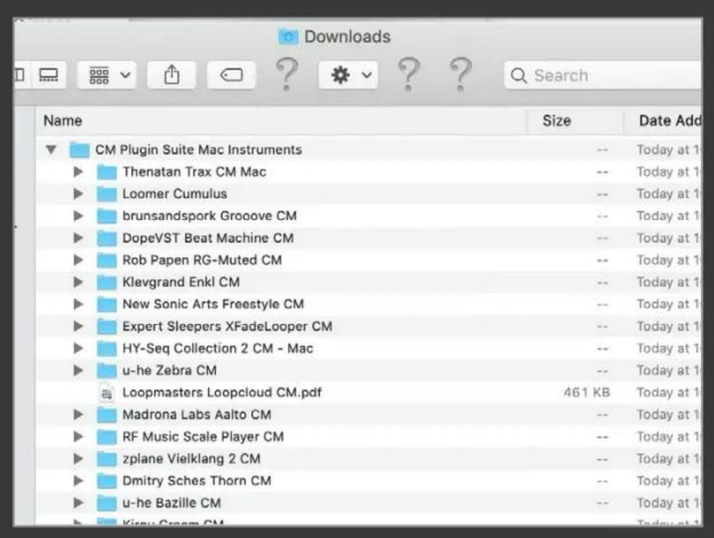
Installing your free plugins

How to access and install the 80+ free plugin instruments and effects from the *Computer Music* Plugin Suite!

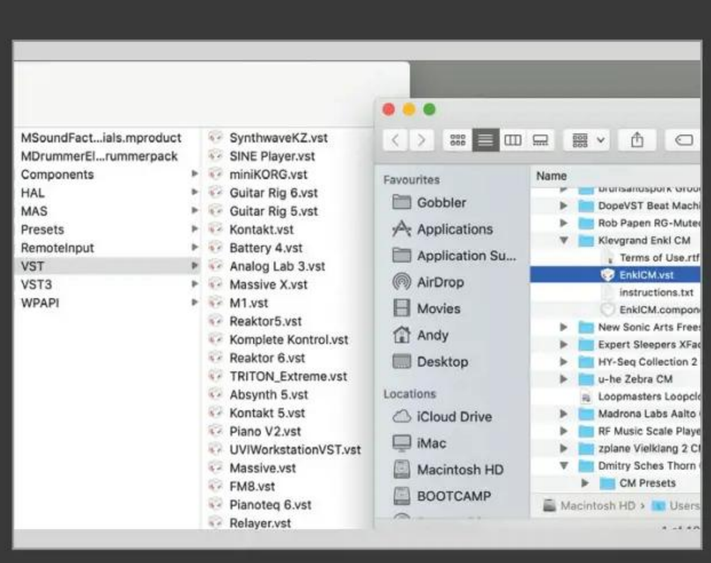


1 > Go to filesilo.co.uk and find this issue under the Bookazines tab. You can find the Plugin Suite under the Software section. There are four main sections for Mac and PC instruments and effects.

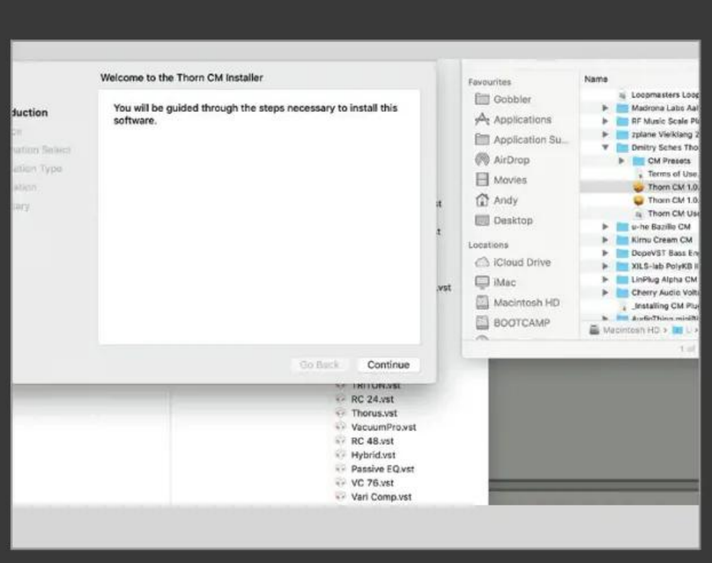
2 > Now simply download whichever instruments and effects you want in blocks. These are big downloads – 1 to 3GB – but you'll get the entire suite in just two downloads (either Mac or PC, depending on your computer).



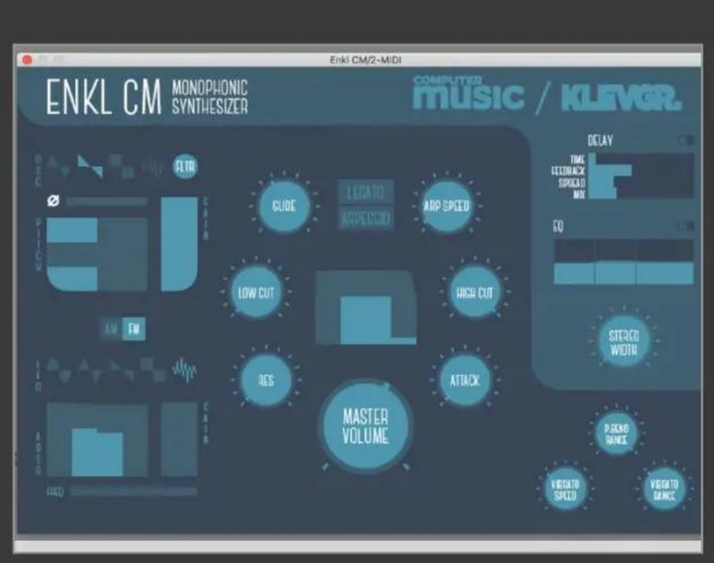
3 > The complete folder of instruments or effects will download as shown above (on a Mac). Open it up and select which plugin you want to install.



4 > There are generally two ways to install a plugin. If it is shown as a .vst file it is ready to simply place in your VST folder and should work straight away once you start your DAW.



5 > Some, like Thorn, need installing so you need to double click on the file and run through your standard installation procedure. The plugin should install into the correct location.



6 > Now open up Logic and the installed plugins should appear in the plugins folder. Simply drag whichever one you want onto a MIDI track and you are ready to go!

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Edit
Functions
View
Tempo
Strings
2-Step Flux Beat 01
Drummer
Beats
Latin (Isabela)
Settings
None
Edit ...
Save As ...
New
Studio Horns
Studio Strings
DAMPING EQ
Disco Strings
Singer Songwriter
Small Section
String Ensemble
Studio Cellos
Studio Double Basses
Studio Violas
Studio Violins
Strings
Room
MAIN
DETAILS
Studio Strings
MOD FX
Delay
Rate
Depth
Feedback
Mix
DISTORTION
FILTER
Stereo Out
Vintage Graphic EQ
ChromaVerb
MacBook Pro

LOGIC PRO

BEGINNER'S GUIDE

If you're new to Logic – or even a long-time user – here's a refresher on how to use this stunning DAW

> Apple's Logic Pro has actually been with us for almost three decades, starting life as Notator Logic, and developed by German company C-Lab, who later became Emagic. Since Apple bought that company in 2002, the software has become *the* DAW for Mac-based – and now iOS-based – music production. This guide is designed for beginners to the software, but also as a refresher if you have been using the software for some time, as there are plenty of great, new features to get into.

The first thing to note with a DAW (Digital Audio Workstation) like this is that – like many other sequencers – you generally create music from left to right, with tracks running top to bottom. Think of each track as a separate part of a song – drums, bass, vocals, synths and so on – and it's easy to get your head around song creation. You are simply creating these tracks – top to bottom – and arranging when they start and stop from left to right. Easy so far, right?

Track types

Most DAWs have two main types of track: audio and MIDI, although Logic Pro has one or two extras which we will come to. Audio tracks allow you to record any sound from the outside world through your interface or Mac microphone straight into Logic. So you might record singing or acoustic guitar, for example. Audio tracks also load in audio samples, created either by Apple (Apple Loops) or third party sample developers which you buy separately. Very often this is the easiest way to create music. These samples are often created as loops, so if you repeat them or join them together they tend to sound great. They might be arranged by tempo so your timing is sorted, or even key so you can place several together and they sound in tune. Apple Loops even adjust their tempo to fit in with whatever you choose. Creating music just with samples is easy: just take a drum loop audio sample, add a bass loop, some guitar, vocals, job done! But it's also a good idea to add more variation, which is where the next DAW track comes in.

MIDI and instruments

This second main type of track is the MIDI track, and here you don't record sound but digital notes which are called MIDI events. These are triggers so don't make a sound unless a sound source is connected for them to trigger. Sound sources that work with MIDI tracks are internal plugin instruments (of which Logic has many), third-party instruments by other developers which you buy separately, or even MIDI hardware, like proper keyboards and synths (again, sold separately).

MIDI tracks are useful because you can quickly and easily get into and edit that MIDI data. You might have played a note out of time or tune, but it's simple to edit the MIDI recording and go in and drag the note to the right position. Similarly you can even change the loudness of the MIDI event by increasing its MIDI velocity value so the note it triggers will be louder.

Logic comes with a great deal of MIDI plugin instruments which these MIDI tracks can play, and these can be loaded in via the main Library browser. Load in instruments by sound or type and use a connected MIDI keyboard or even your own computer keys (see the tutorial on how to do this) to 'play' the instruments and record the results.

You can also buy many third-party instrument plugins for Logic, everything from the latest cutting edge synthesisers to full libraries that mimic a concert hall orchestra. These third-party plugins cost anything up to around £500 for the most expensive, but most cost £100 or less, and there are also some great freeware plugin instruments that won't cost a penny.

Finally, we should mention Logic's Drummer, a MIDI track that is used for creating easy beats. It uses Logic's Drum Kit Designer and other percussive tools.

Logic really does come with everything you need to create full, professional pieces of music, and has enough flexibility to put tunes together in a variety of ways. Over the page we'll detail some of Logic's interface features and on the following pages, we'll explore some of those composition options. We'll look at how to create MIDI tracks and events, and also look at the Live Loops grid and how you can jam and create tunes there. And we hope the rest of this special Logic bookazine guide will inspire more of your own Logic music creations.

LOGIC PRO'S INTERFACE EXPLAINED

LOGIC PRO CLOSE UP

Let's zoom in on the main features in Logic Pro's interface window – from the mixer to the newer Live Loops feature – and discover how song creation works

MAIN WINDOWS
These open up the main sound/instrument library, the track inspector, help menu, Smart Controls, mixer and editors

MAIN LIBRARY
Choose sounds and instruments by name or type. Logic comes with an incredible number of both and this makes it easy to search for what you want

SELECTED CHANNEL DETAIL
This reveals more information about whichever track/channel of your song that you have selected

LIBRARY OPTIONS
Check for updates and for what is currently downloading or queued to download

TRACK TYPES
Different icons show which kind of instrument tracks make up the song

PROJECTS OVERVIEW

Shows the position of the song, its tempo, key, and time signature. To the left are the transport controls to play, stop, record etc

LIVE LOOPS GRID

A recent addition to Logic allows you to play loops, riffs and beats instantly and 'live', with the selected ones all looping in time

SECTION EDITING

Make bigger edits – copy or cut – on larger sections of your song with these two options

ARRANGE

These help put your song into arrangement parts like intro, verse and chorus. You then move each block around with ease

BROWSERS/ EDITORS

Opens up more detailed panels displaying audio file, loop and event position information; not essential to have open but helps with things like sorting audio files and deleting any unused audio

LOCATORS, COLOURS, ZOOM

Change colours of tracks, zoom in on specific ones or set song locators with these icons

TRACKS AREA

This is the main window in Logic Pro where the song creation happens, from left to right. All tracks run top to bottom

DISPLAY MIXER CHANNELS

These show different input and output channel types and combinations. You can also adjust the width of the channels here

SONG TRACKS

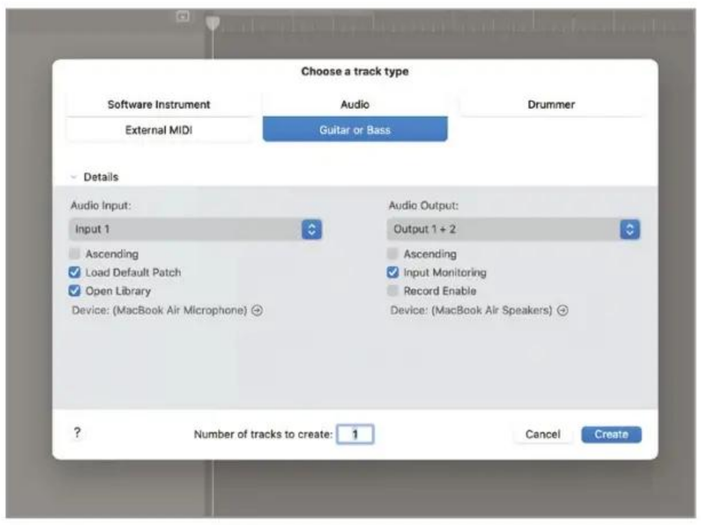
These are essentially the different instruments in your song and can be MIDI, audio or drum tracks. Here's where you trigger internal plugins or load in audio per track

MIXER PANE

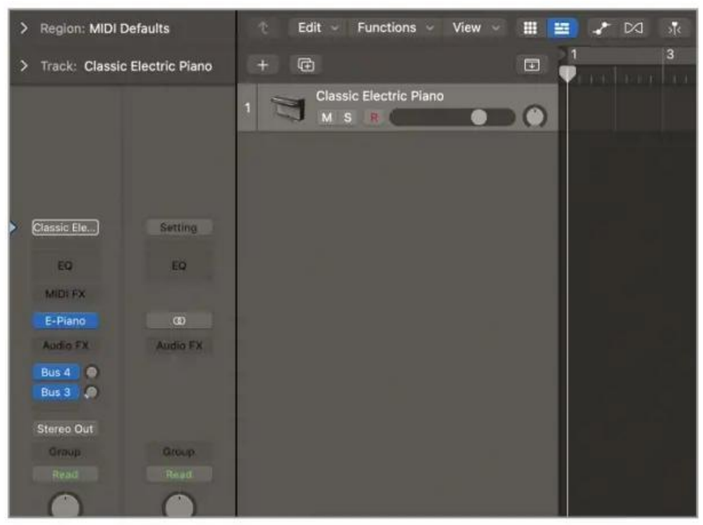
This reflects the song tracks (left) but shows them left to right. It is one of the most important windows as you adjust volume levels, pan positions and load in different effect plugins per mixer channel

> Step by step

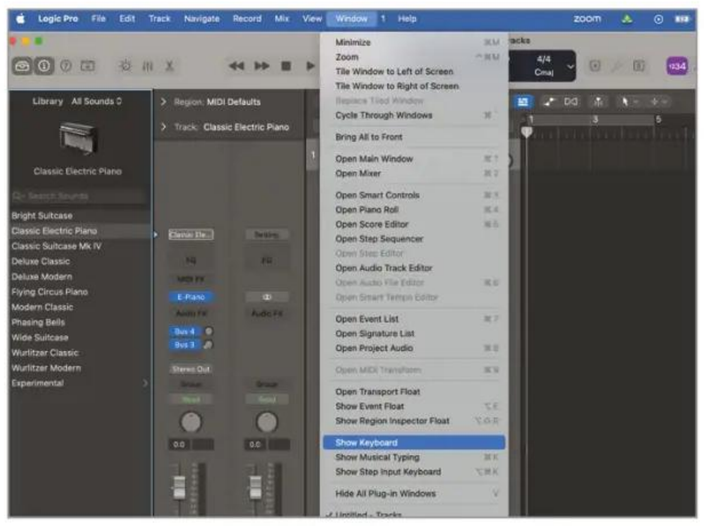
1. How to create your first song in Logic Pro



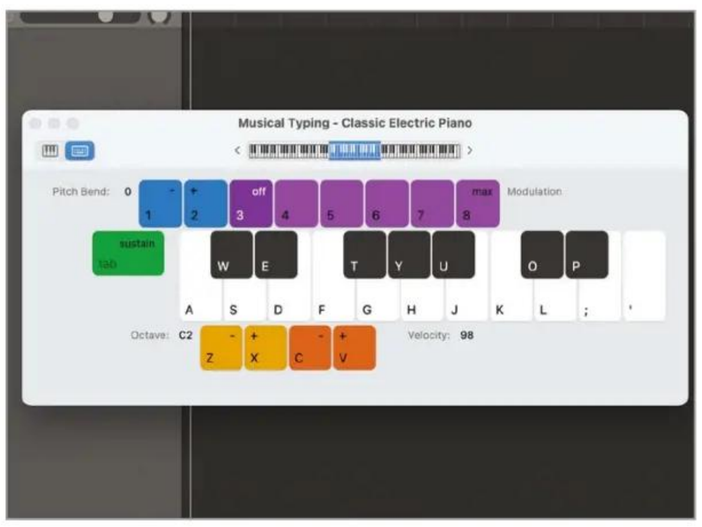
1 > We'll assume you have Logic installed and running and will now show you how to create a piece of music from scratch. Firstly, start a new project. You can load a template or project with specific tracks, but we've simply selected 'Software Instrument' and 'Load'.



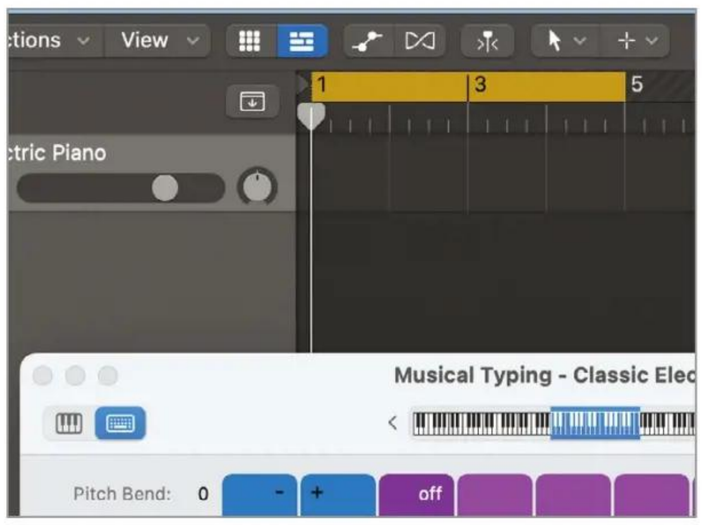
2 > This is the ideal way to start a song if you already have a musical idea that you want to get down quickly. Logic loads with one track and a piano as an instrument. This is a MIDI track (not audio) and the notes are triggering a Logic piano instrument as shown.



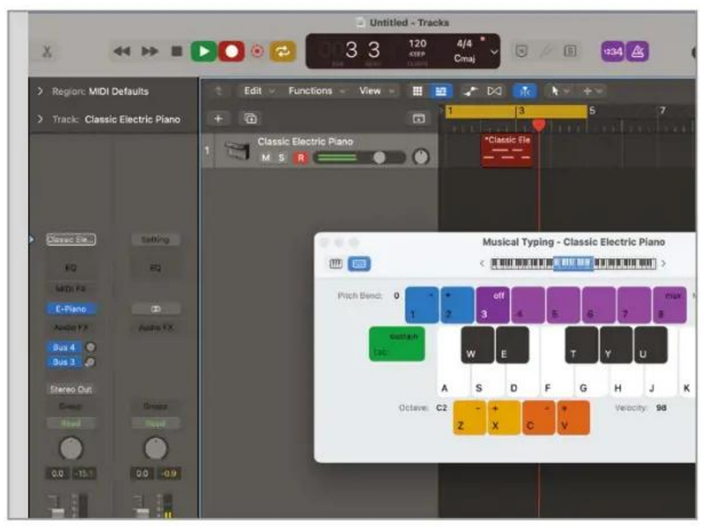
3 > Like any piano, in order to hear it, you have to play it! In this case you'll have to connect an external MIDI keyboard, or better still, just use your computer keyboard to play it. Head to the Window menu and select Show Keyboard.



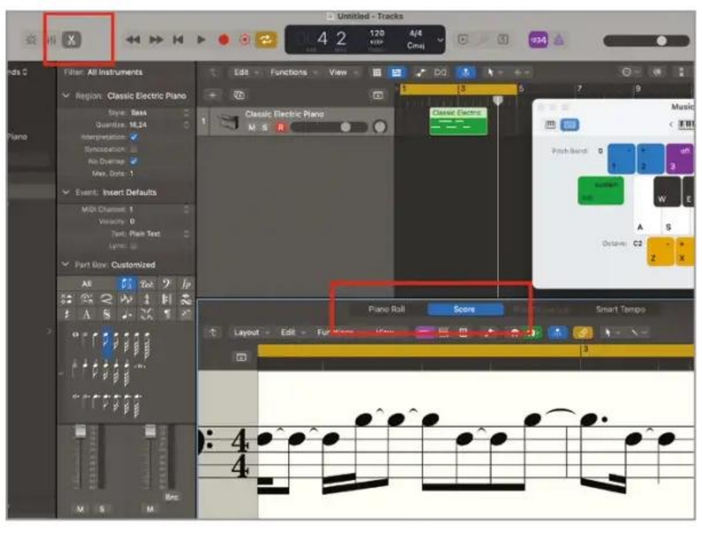
4 > A virtual keyboard appears. Now hit the keyboard icon (top left, right hand icon) and the keyboard maps over your computer keyboard, so hitting letter 'A' on your computer keyboard will play note C on the piano. You are ready to record some notes!



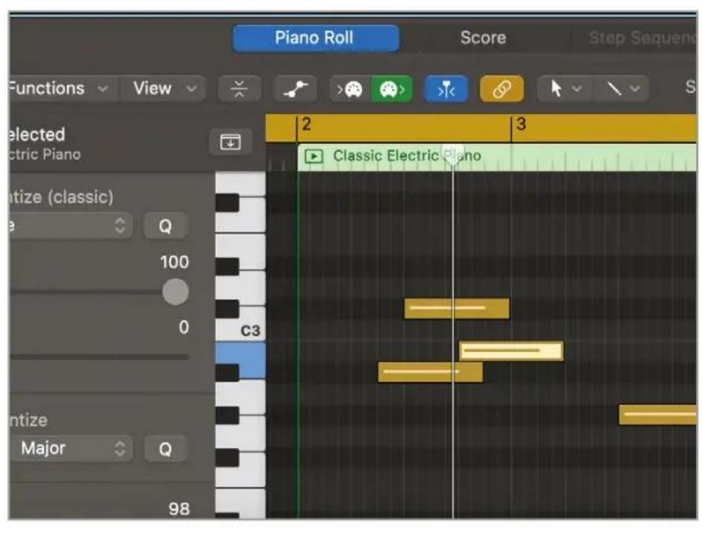
5 > Before we record, we're going to loop four bars on the piano track (click on the yellow line as shown above) so that it cycles around and you can practice before you record. Switch the metronome on (to the right of the main Overview pane – see previous page) so you can hear the timing and tempo of the song which we have set at 120bpm.



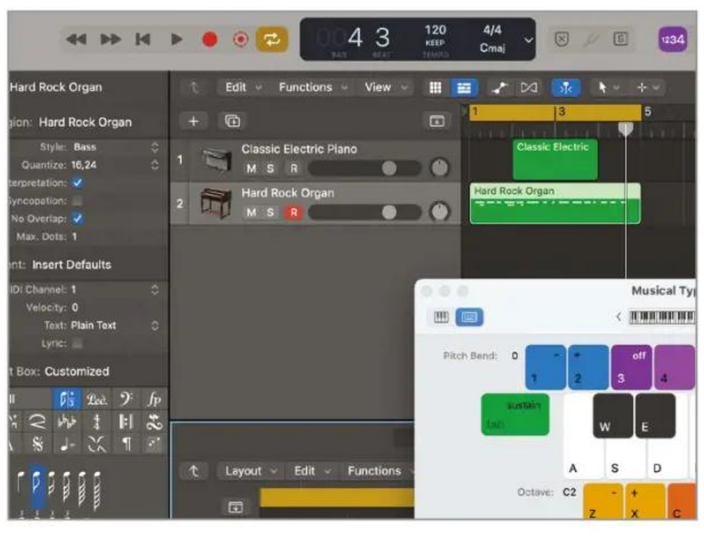
6 > Now hit the red Record button in the transport area (next to the green Play button) and after a short count in you can record notes. If you play the wrong note you can simply delete your recording (backspace) and repeat the process. However, DAWs allow you to easily correct mistakes, which we will do now.



7 > To edit your recorded piano part, click on the scissors icon (top left and as shown in the red square above). This opens the part in a new pane below the main track area, revealing the notes you have just recorded. In the first instance the notes are shown as a traditional score.

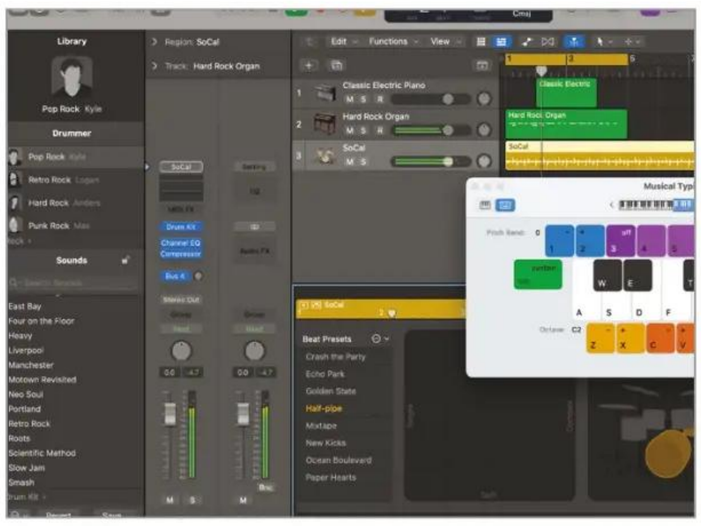


8 > However, as we don't read traditional music, we'll click on the Piano Roll option which shows the notes as blocks next to a traditional keyboard. You can now zoom in on your incorrect notes, and drag your them to the right location – either another note, or the same note but in better time.



9 > That's one part of your song complete. Now it's simply a matter of repeating the same process with new tracks. Select New Track from the Track drop-down menu and Software Instrument. Now we're going to choose a different instrument, an organ, simply by selecting it from the Main Logic Library (left window). Now record your organ part.

> Step by step 1. How to create your first song in Logic Pro (continued)



10 > In this way you can quickly build up a song track by track. Here we've added a Logic Drummer track to our song for some instant beats, but you can keep going, adding more instruments or even audio tracks – whatever you like!

11 > Now we're going to open the mixing pane to explore some effects and basic mixing. Click on the Mixer icon as shown above (top left) and the main Logic mixer will open, showing the tracks you have created so far.

12 > The first thing you might want to do is explore some effects to put on your sounds. Click on an empty space in the Audio FX area and a drop-down menu will appear with some audio effects you can load in. We're opting to put an EQ on our drum track as shown.

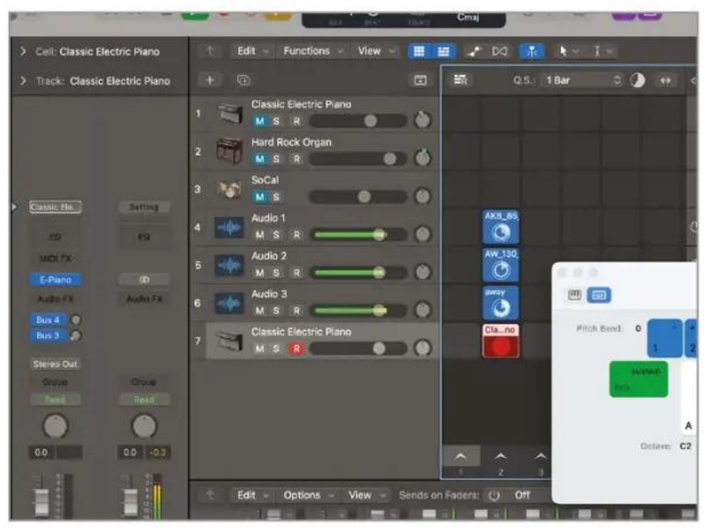
13 > Next we've loaded Logic's rather great Chromaverb reverb effect onto that organ sound to give it a richer tone and more atmosphere. You can explore all of Logic's many effects this way.

14 > The mixer can also be used to mix – that is adjust volume levels using the faders. Here we have lowered the piano and drums compared to the organ. You can also adjust the pan (left/right) position of each using the circle control on each of Logic's channels.

15 > We've created some tracks from top to bottom. Now try some very basic arranging by repeating some of the parts you have created so that they fill the song timeline from left to right. Command>R repeats each part.

16 > Another great way to create songs is to use the Live Loops grid. Here, different cells can load or record audio, MIDI or Drummer data and all loop in time with one another. Simply switch on loops, add more, stop and start groups and you can then record a complete song. First click on the Live Loops icon as shown, then Control click a cell to load any audio.

17 > Load in more audio samples and loops in different Live Loops slots. Everything plays back in time and you simply click on a cell to stop and start it. You can then record these movements to create a new song arrangement.

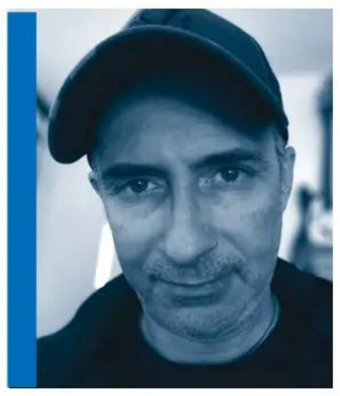


18 > Finally, combine both the Live Loops and standard recording method from Step 1 onwards. Now the MIDI piano riff you are recording will be in a Live Loop cell so will play along with anything else. It's the best of both song creation worlds! That's your first Logic tune done. **cm**

From mono to stereo

Are you battling a mix that includes too many mono sounds? Maybe they just need a bit of added width. Welcome to Jon Musgrave's Logic Masterclass...

Jon Musgrave



Jon is a London-based producer, mixer, composer and club remixer with a diverse CV that spans dance, pop, rock and music for media. He's also a long term contributor to *Computer Music*. Whether working alone or collaborating he usually handles final mixdowns, which is why we've got him to share some pearls of mixing wisdom.

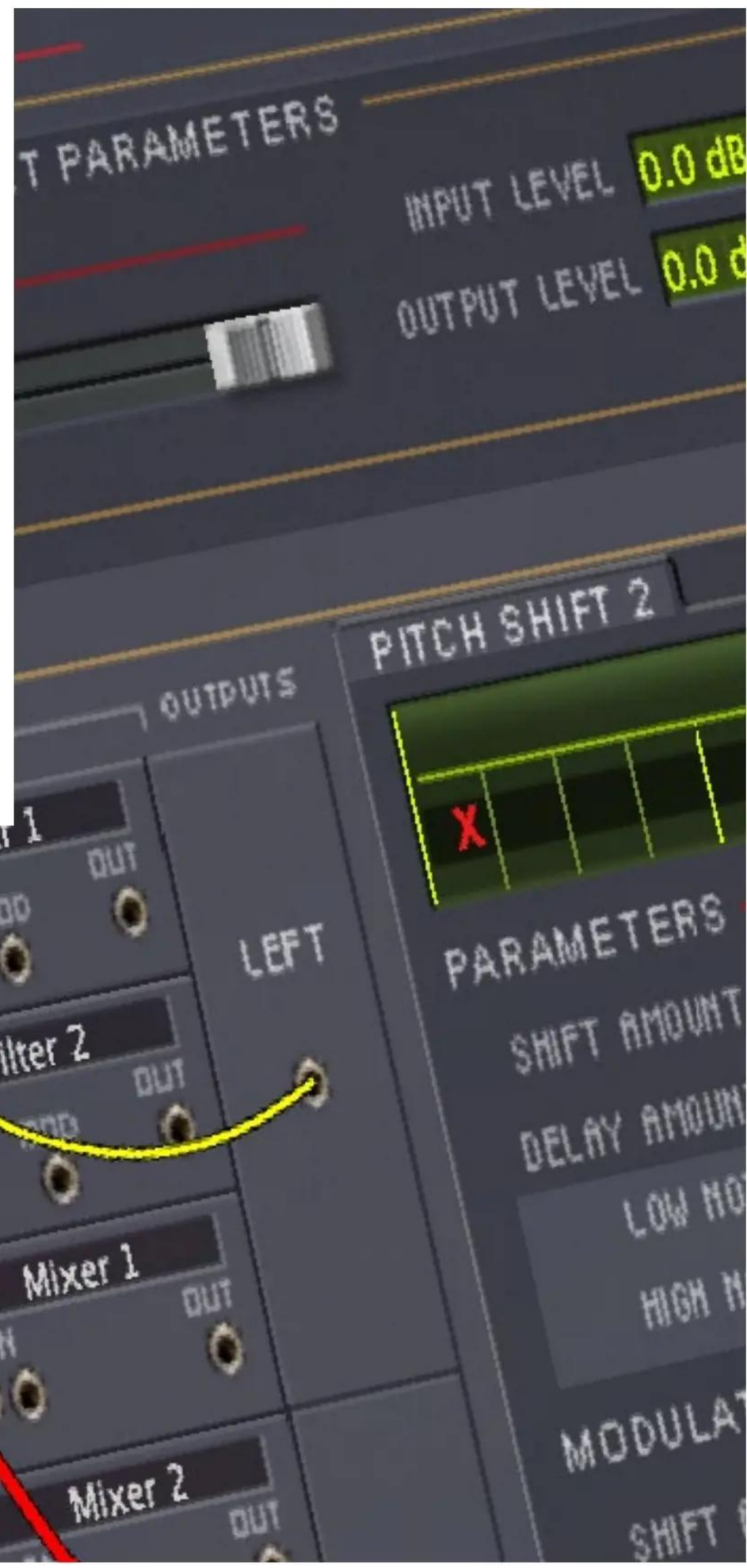
> Making full use of the stereo image can be an important aspect of a successful mix, and often we need to find a way to add width to mono sounds.

The groundwork for a wide, expansive mix is often laid at the production or recording stage. You might have double tracked elements to create really tight doubles that you can pan to opposite sides, or maybe you've recorded instruments in stereo complete with a great room ambience. Either way, these components mean you're already well on the way to stereo nirvana and can supplement these aspects with further reverbs and panning to create stereo width as required. But what if you don't have these elements in the first place and are presented with a bunch of mono sounds?

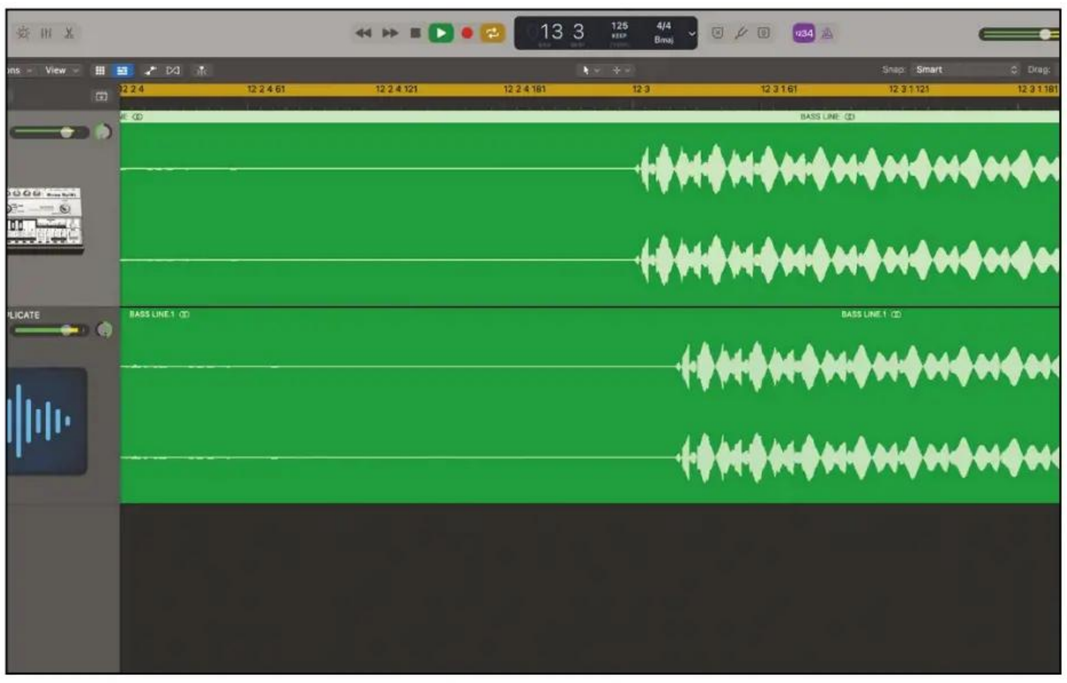
An obvious solution is artificial reverb, but this adds a lot of colour. Here I'm going to look at a number of ways we can add width to mono sounds without that reverb colour. These techniques are pretty straightforward and use some form of delay, pitch shifting or pitch modulation. That said, they can also have downsides, particularly when you mono them, which we'll also discuss.

Given how handy this sort of effect can be, it should come as no surprise that plugin developers have finessed the idea and bundled it in task specific plugins.

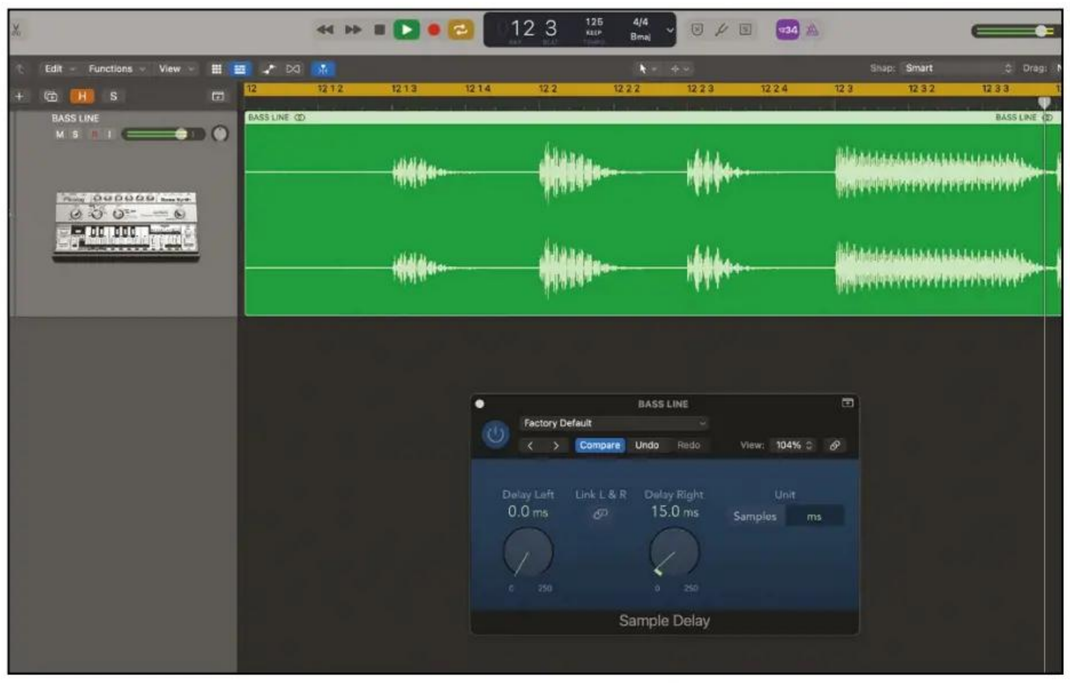
These definitely vary in complexity, and you'll even find a free one (JST & Boz Digital Sidewidener) in the **cm** Suite. I'll finish up by looking at what these can add.



> Step by step 1. Ways of adding stereo width to mono sources



1 > If you want to add stereo width to a mono signal the simplest way is to split it into two, hard panning the two signals in opposite directions and then delay one side slightly. This works for delay times up to about 25ms (the Haas effect). Any longer and you begin to notice the delay.



2 > You can do this by duplicating the track and delaying one of the tracks. Or simply grab a utility delay plugin with millisecond delay capabilities. However, although this technique sounds great in stereo, when you mono it you will probably get comb filtering.

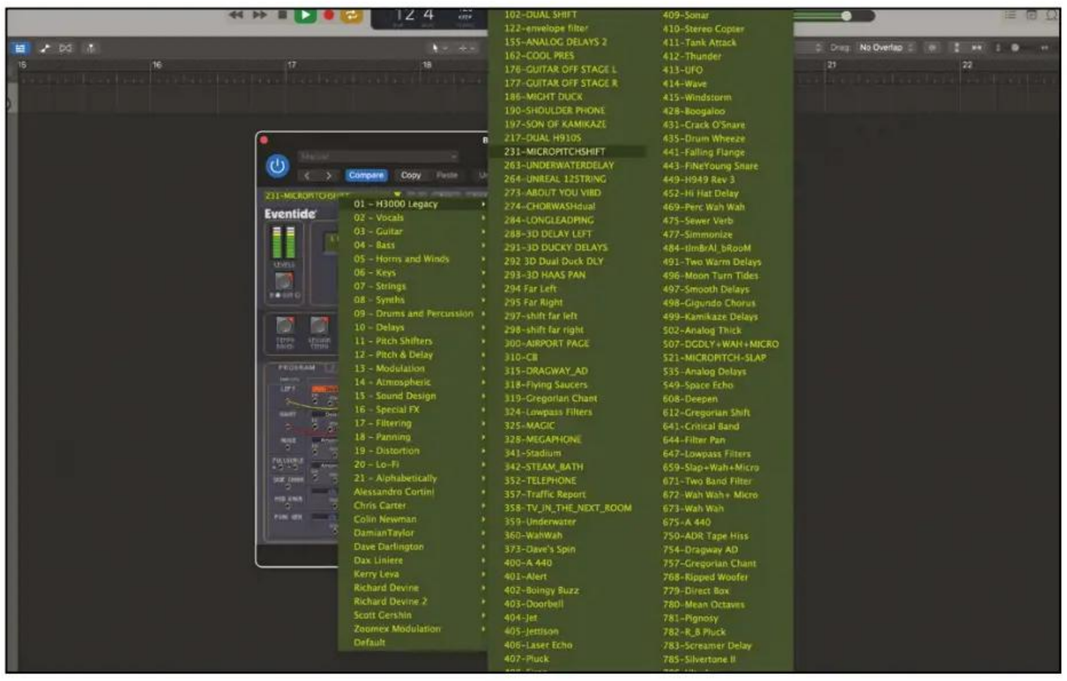
3 > Whether the comb filtering in mono is a problem is, of course, subjective but also quite dependent on the type of sound and the exact delay timing. One option is to mono the signal and adjust the delay timing to get a sound that's acceptable in mono.

4 > If we combine delay with pitch modulation then we can reduce the comb filtering created by our delay technique and this is what a chorus does. However, to make this work as a widening effect, we need to split the effected and direct signals, much like the classic stereo chorus effect, panning one to the left and one to the right.

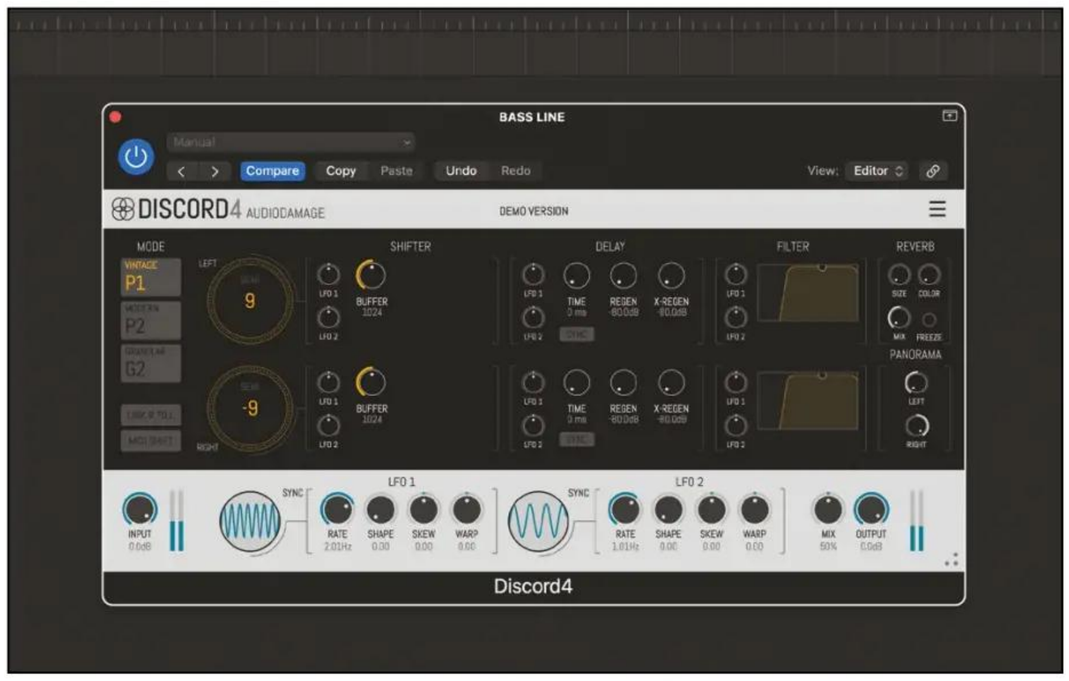
5 > You'll find that some plugins include this as an option. A plugin such as UAD's Brigade Chorus, which is based on the famous Roland CE-1, includes the Classic mode for this purpose. Alternatively, grab a chorus with dual mono capabilities, setting the mix to 100% on one side and 0% on the other.

6 > With the two signals basically hard panned to opposite sides this produces a pretty wide effect and it can sometimes sound a bit too detached. If this is the case you can simply use a stereo width plugin to make things narrower, or if you've used two separate tracks, try reducing the panning.

> Step by step 1. Ways of adding stereo width to mono sources *(continued)*

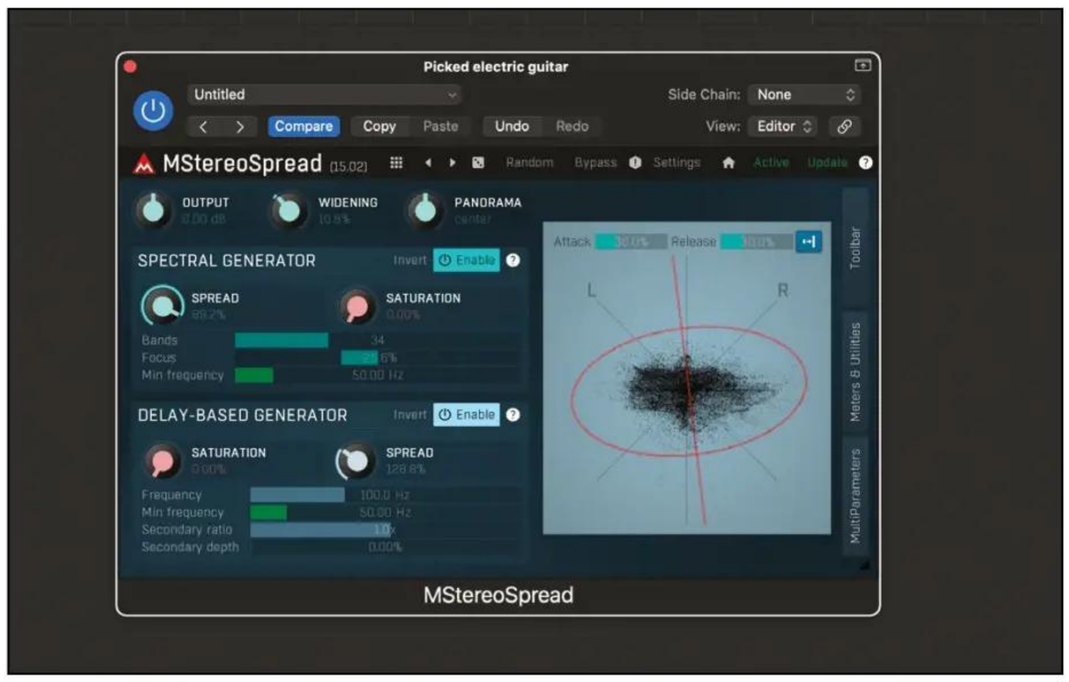


7 > A bit like applying delay, we can create width by shifting pitch. Typically associated with Eventide's H3000 MicroPitchShift effect, the key here is that the shift is very small (a few cents) and that it's different on the left and right. It can also be combined with a short delay like in step 1.



8 > To match the classic effect, you're looking for about +9 cents on one side and -9 cents on the other. Not all DAW stock plugins can deliver this sort of shifting in a convincing manner. Plugins such as Soundtoys Microshift and Eventide's MicroPitch are purpose built for the job, but more general plugins such as Audio Damage Discord 4 are also perfectly good.

9 > A variation on this is to modulate the pitch on one side using an LFO. This is a simplified version of another H3000 classic (Voice Doubler). Using H3000 Factory, I've augmented the existing micro pitch shift, setting the LFO to 1Hz and the shift limit to about 10 cents. Other good plugins for this include Audio Damage Discord 4 and Waves Doubler.



10 > Mono to stereo plugins vary in their complexity and effectiveness but usually attempt to retain good mono compatibility. Couple this with their turnkey simplicity and they present a highly attractive proposition when you're after a quick reliable way to add width to mono sounds.

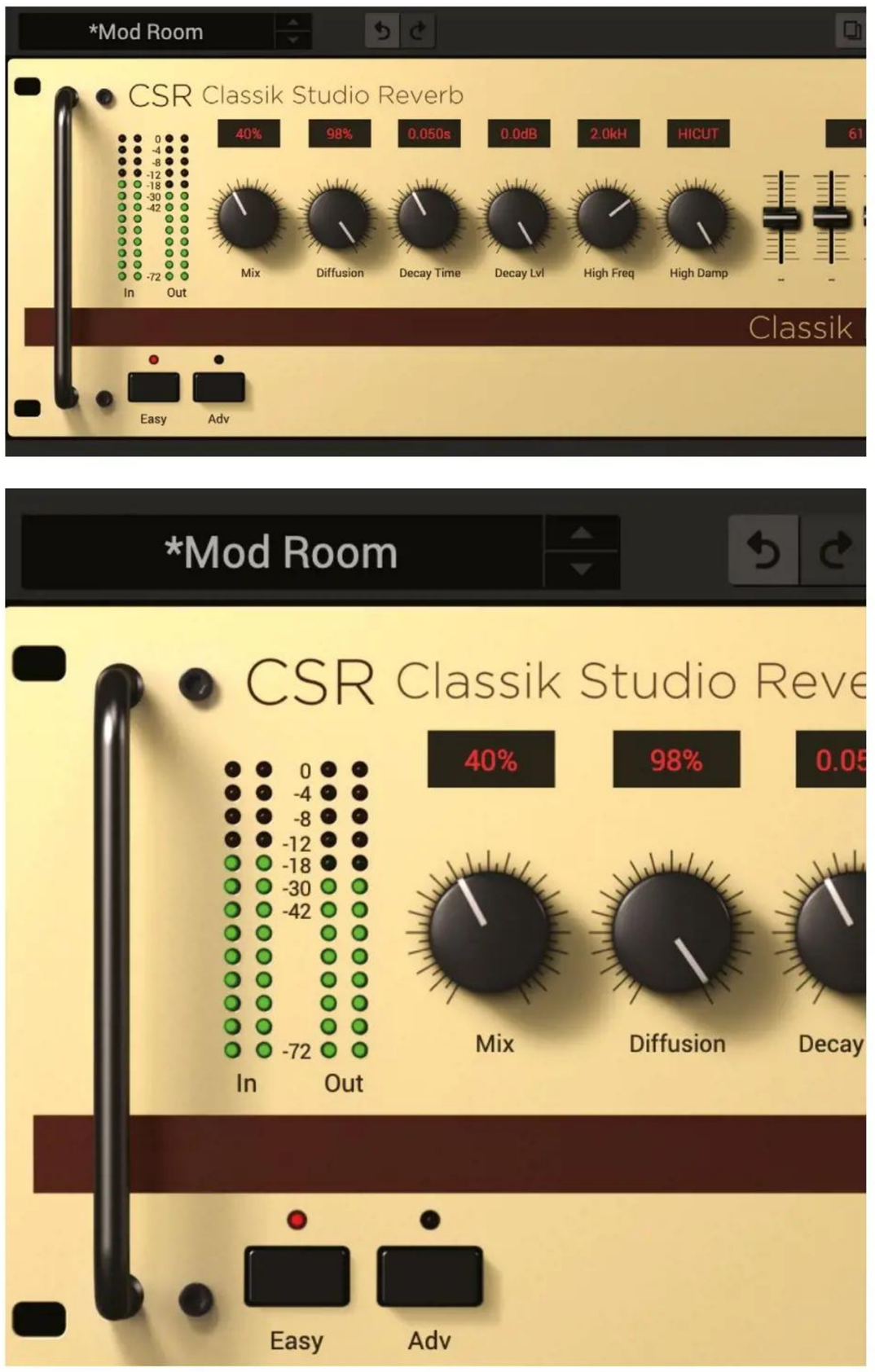
11 > Sidewidener is a free **cm** Suite plugin with three width modes that provide progressively more decorrelation and thus wider effects. Simply adjust the Width control to taste and use the Tone parameter to focus on the desired frequencies. It's simple to use, doesn't degrade your mono signal and is, of course, free.

12 > If you have some budget, Nugen's Stereoizer 3 is one of the best wideners around, handling both mono and stereo sources. For mono sources you have two algorithms based on timing and intensity, and both include frequency limits and focusing. It's highly flexible, sounds excellent and has great mono compatibility.

PRO TIP

BARELY THERE REVERB

As mentioned, reverb is a great way to add width but it also adds colour, and the techniques here are designed to minimise added colour. However, there is a way to use reverb without adding too much colour, and this can be great for creating subtle width. What you need is a very short reverb. Nevertheless, the success of this technique really rests on finding the right sort of reverb and the short reverb capabilities of plugins seem to vary quite a bit. What you're after is an effect that lets you reduce the size and decay time right down and also has a nice decorrelated effect, so it adds width. To check this, load the reverb as an insert and set the mix to 100% wet. Here I've loaded up one of my favourites (IK Multimedia's CSR Room) which allows you to adjust the width of the reverb signal, so you can exaggerate this effect even more. With a few key tweaks (decay time 0.05s, room size 4.0m and high cut 2kHz) I've created a lovely wide effect which I simply need to blend to taste, which is about 40% for this guitar track.



Britney Spears' *Toxic* features a perfect example of mono to stereo

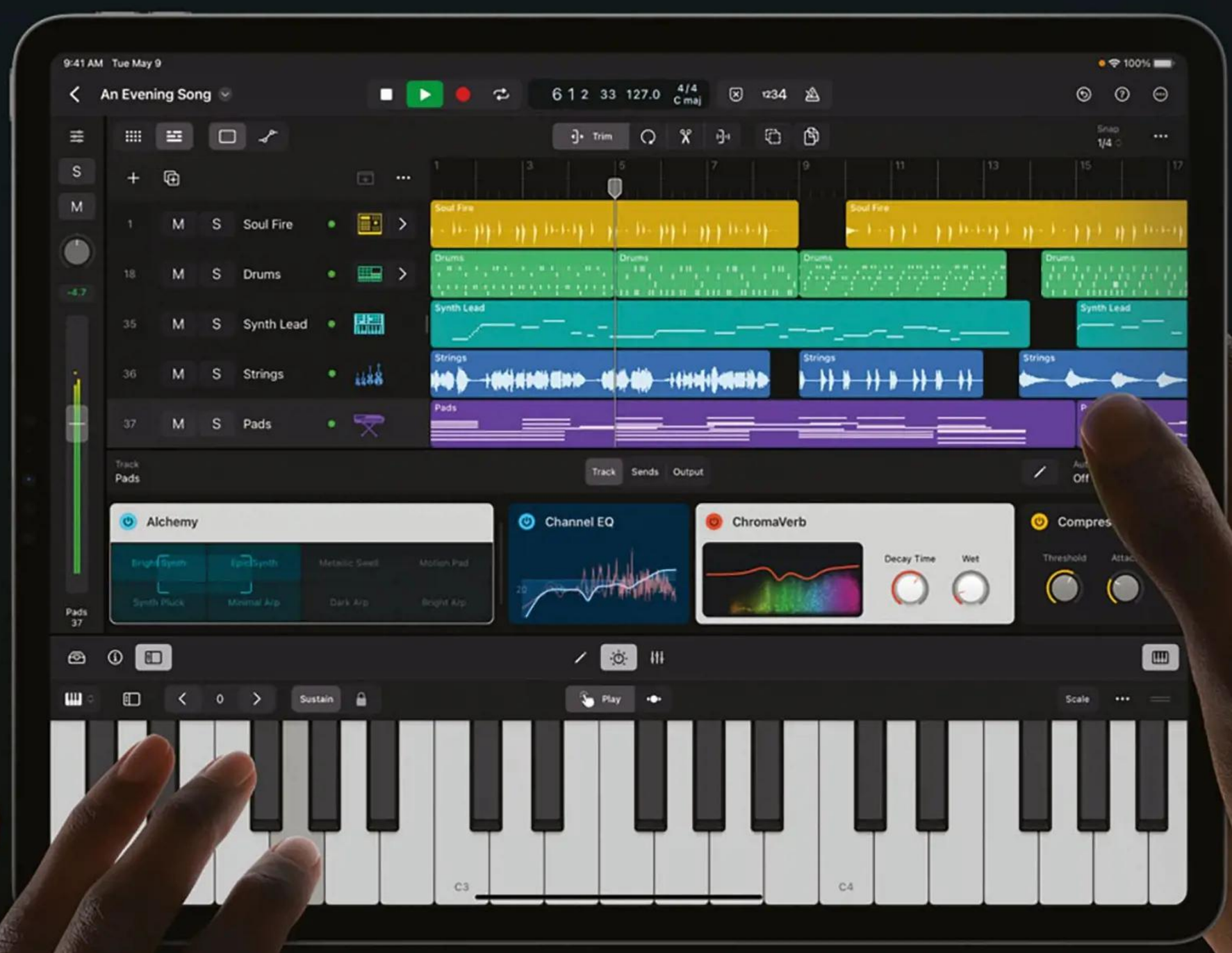
Jeff Kravitz/FilmMagic

RECOMMENDED LISTENING

ED SHEERAN
2STEP
Check out the first 30 seconds of this track to hear typical mono to stereo processing in a contemporary mix.
bit.ly/CM_2step

BRITNEY SPEARS
TOXIC
A great track to reference on many levels, but focus on the acoustic guitar for a perfect example of mono to stereo.
bit.ly/CM_Toxic

Hands-on with Logic Pro for iPad



Excited by Logic Pro for iPad? Deciding whether you should buy a new iPad just for the experience? Made the jump already? In this feature, we're taking a deeper look at this new tablet-oriented spin on Apple's beloved DAW, exploring its new features, what benefits it has over its desktop parent, and how to make the most of it

We'd been speculating that Apple could release Logic Pro for iPad for rather a long time before the company's big reveal a few months ago. They had, after all, been quickly upping the specs of the iPad for a couple of generations, making great strides towards turning the device into a true tablet powerhouse.

The inclusion of the Apple Silicon chips in the latest iPad Pro range was the final signal that a full-fat version of Logic Pro could make the jump from desktop to iPad iOS, and sure enough, shortly after their arrival, Logic Pro was revealed running on the iPad in all its glory. But the best news is you don't actually require a full-blown iPad Pro with those Silicon chips to run it. Even iPads with the A12 Bionic chip (and running iPad iOS 16.4) are capable of running the app, which means devices going all the way back to the 8th generation iPad, 5th gen Mini and 3rd gen Air.

For many older iPad users, though – including us, it has to be said – running Logic Pro on iPad might mean an upgrade to the latest iPads currently on sale. Those are 9th and 10th generation iPads, the iPad Air and iPad Pros which have A13, A14, M1 and M2 processors respectively, and should run the software without any issues.

So the question is, is this long-awaited release enough to make you upgrade your iPad? And if you already have, how can you make the best of Logic Pro for iPad? Read on!

It's Logic... and then some

The first thing to report is that Logic Pro for iPad is very much its own beast. While it will be familiar to both GarageBand and Logic Pro users, on whatever platform they are used to making music on, the new iPad version of Logic very much does its own thing, in its way. And really the app *has* to forge its own path. It's bringing in an all-touch ethos into Logic music making so will require a slight (and sometimes big) shift in thinking. So this isn't a port of the desktop version, more a practical vision of Logic Pro that makes use of the new touch environment in which it now sits. And that means it will require some getting used to.

That said, it is also very familiar. You'll recognise many of the 100 plugins that come with the software like ES2, Space Designer and Retro Synth. However, all-new plugins including Sample Alchemy and Beat Breaker deliver some magical audio and beat features, albeit in a very Logic(al) way. These alone really are worth trying the app out for.

And like the desktop version, you can download as much content as you like, although the maximum is rather less than the 72GB the Mac version requires. For the iPad, you are looking at a very reasonable 15GB, so we say go for the lot.

Once you are up and running, you can enjoy full automation and a great mixing experience. The mixer itself is very familiar, you get stacks of effects in blue and the main instrument per channel in green. Some features have obviously been redesigned to make the whole touch workflow that bit easier, so simplified instruments and effects are lined up per channel in Tile View – a chain of devices - You simply double-click on each to open the full interface with all the controls.

Other parts are direct lifts from Logic in terms of the design. The Ableton-style Live Loops feature, where you can launch audio and MIDI clips, always in time, looked pretty much like it was designed for an iPad when it came out, so that stays very close to the desktop version, as does the Step Sequencer. Many of the plugins look very similar to the originals, too, particularly the effect devices.

> Logic Pro for iPad could very well be just what your music-making has been waiting for

New arrivals include a tag browser for easy auditioning of sounds, but it's that touch workflow that is the biggest difference. You'll soon realise that you don't need the menu system that a mouse and pointer always leads you to, and that touching, twisting and pinching gets you where you need to be, in many cases probably quicker than you might be used to with the desktop version.

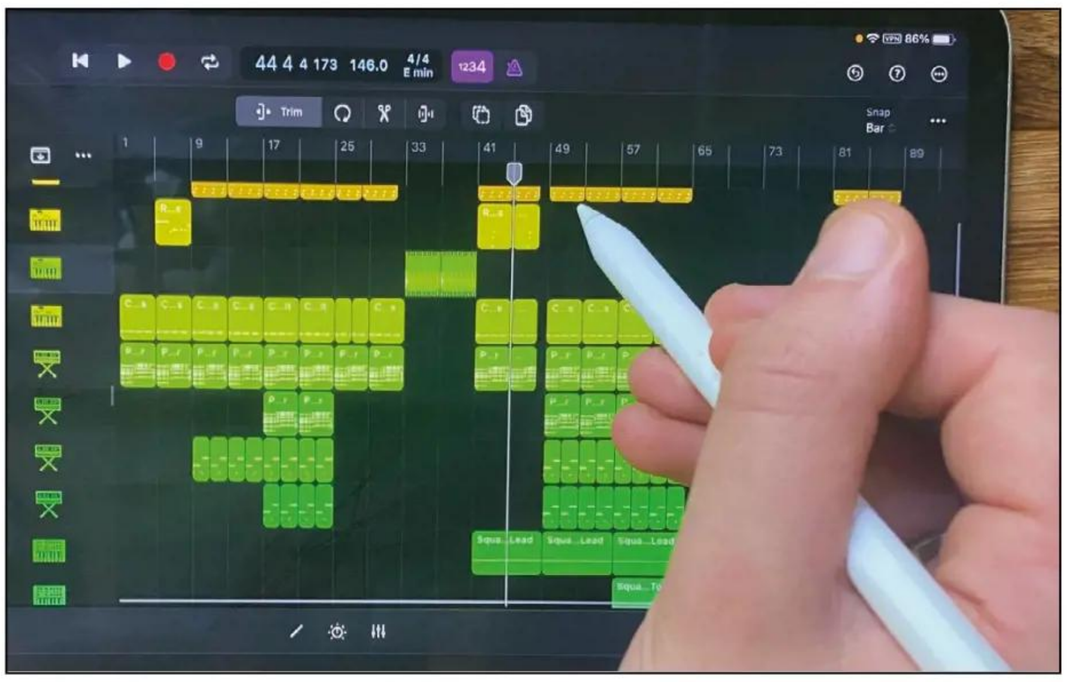
Something old, something new

It's perhaps likely that some of those long-term Logic desktop users might be more confused by some of the new ways of doing things with this all-new Logic Pro – experienced and existing iPad users will probably find it all very intuitive and comfortable. So, if that long-term desktop Logic user is you, you've come to the right place. Over the next few pages we'll detail some of the new workflows – some of the different ways of getting where you are used to going with desktop Logic – and also some of the great new features you can enjoy with Logic Pro for iPad.

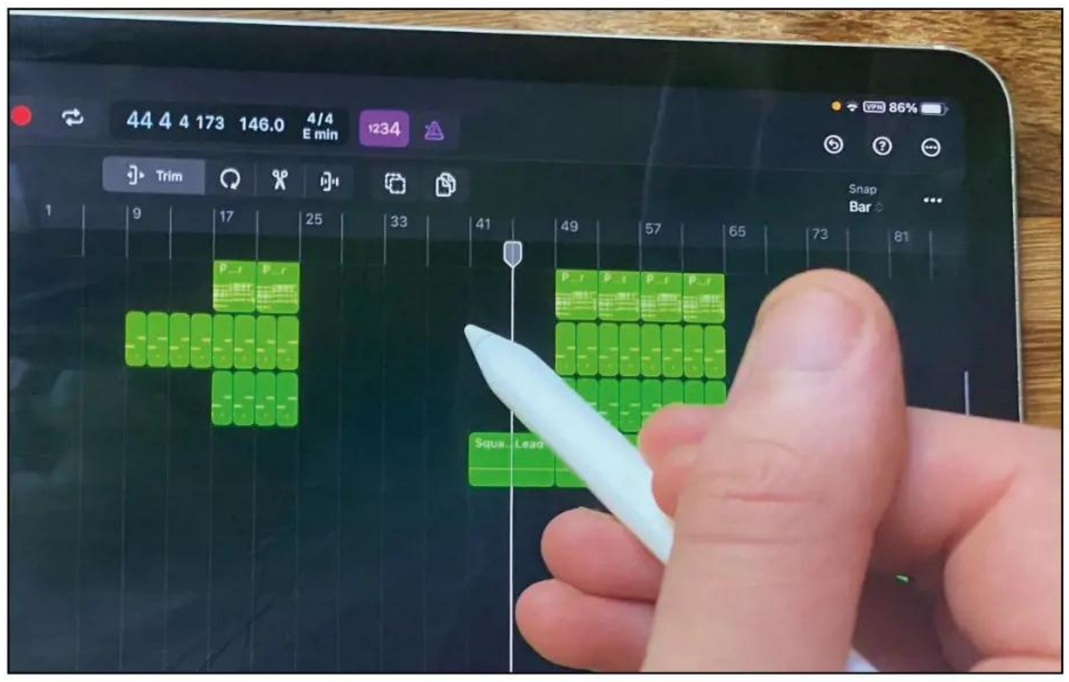
Indeed it's those new Logic features that make it worth trying out the new DAW. In fact we'd urge you to do just this, because you can enjoy the app totally for free for 90 days, so if you have an iPad with the power, give it a go, and use the following tutorials to immerse yourself in this new Logic touch environment, and then decide if it's worth a long-term purchase.

Logic Pro for the iPad could very well be what your music-making has been waiting for. All that power, all those plugins and all those professional features on an iPad so you can make music anywhere. At last, a *proper* DAW in the iOS environment – yes, please! So try it for free and see if you are as excited by this new touch DAW as we clearly are.

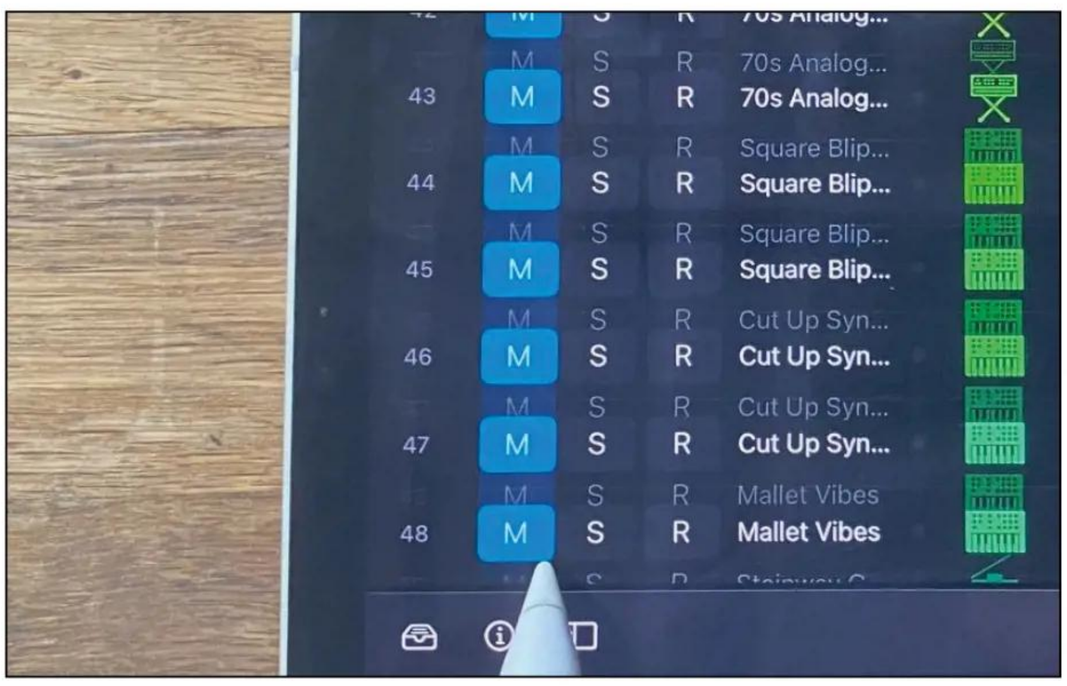
> Step by step 1. Multi-touch functionality



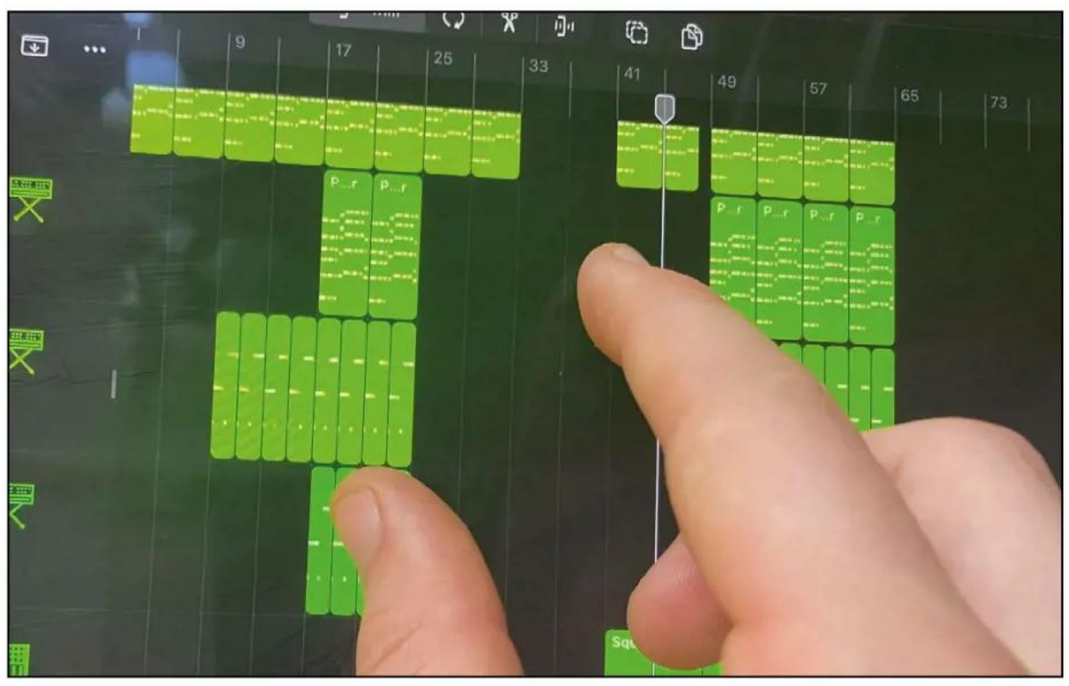
1 > The familiar approach of song tracks going from top to bottom and song arrangement from left to right still applies, but the big difference here is obviously touch operation. Using a stylus is good – not absolutely essential – but for some of the more precise moves in Logic Pro for iPad, it is recommended.



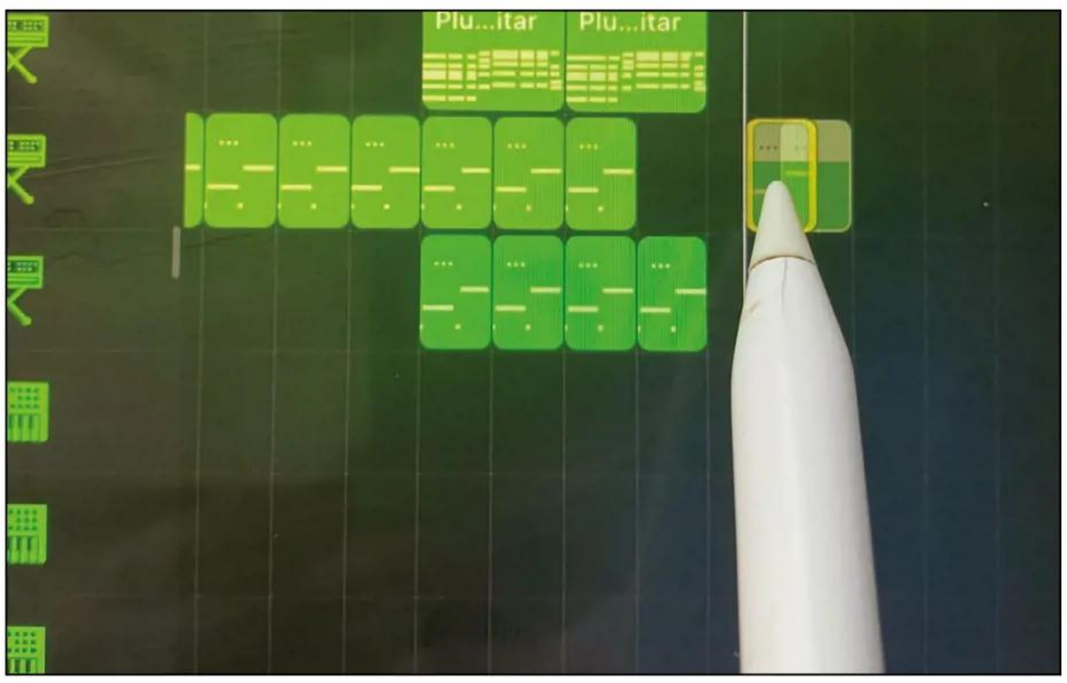
2 > Moving around your main project is as simple as touching the screen and swiping up, down, left or right – a single gesture will take your from one side of a project to the other. You can also highlight tracks and regions simply by touching/clicking them.



3 > The touch operation comes more into its own when muting and soloing. Click per track or click and drag/swipe to mute and solo several adjacent tracks simultaneously. Many tasks like this are now undoubtedly faster with touch.



4 > One such task which we think will revolutionise our particular workflow is the pinching of the UI for zooming in and out both vertically and horizontally. Yes, there are different ways of doing it on the desktop version, but pinching has been made to feel so natural by touch devices like the iPad that zooming is now second nature.



5 > In the main screen, it's just as intuitive to move parts around. Simply click and drag with either your finger or pen/stylus, just as you would that mouse and pointer. Click on the edge of the event and drag it to extend.

6 > The plugins Tile View is a cool new feature. It's an easier way of seeing devices on a channel and operating their most important parameters, with large enough controls to be able do this by touch. Devices on a channel are listed left to right, in an Ableton Live style.

> Step by step 2. Navigation, devices and the mixer

1 > You get MIDI effects, instruments and audio effects, and the main controls are on show and very easy to see. Retro Synth has its Filter and Resonance controls, for example, often the most commonly used synth options.

2 > Clicking on a device tile opens it up so you can quickly access more of its controls. You might have to make the window bigger to see them, but once again, it's a case of swiping up and down to navigate around the plugin's UI. Here's Retro Synth bigger.

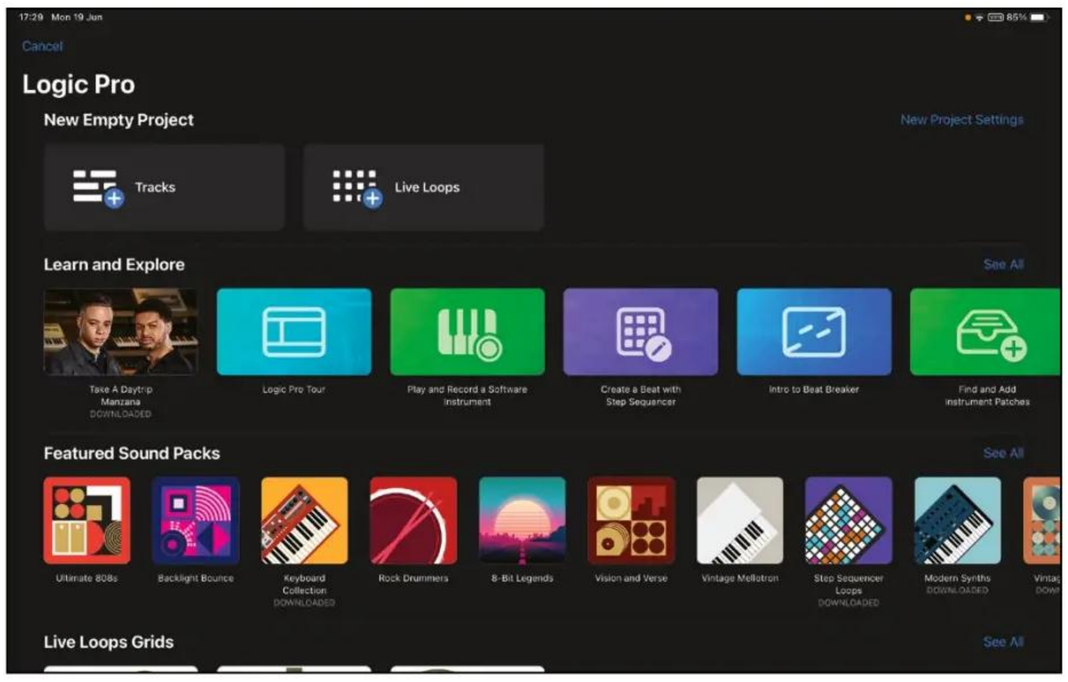
3 > The Play Surfaces icon (bottom-right corner of the UI) opens a menu of performance/recording options – Keyboard, Drum Pads, Fretboard, Chord Strips and Guitar Strips – to play an instrument. Again, these are multitouch so you can play the keyboard with both hands, if they are small enough or your iPad is large enough!

4 > By now you'll have opened up plenty of instruments and effects but one of the neat – and necessary – workflow features of Logic Pro for iPad is that all the windows are resizable by clicking and dragging on the right-hand side so you can customise everything that is open. Here we've reduced the size of Retro Synth.

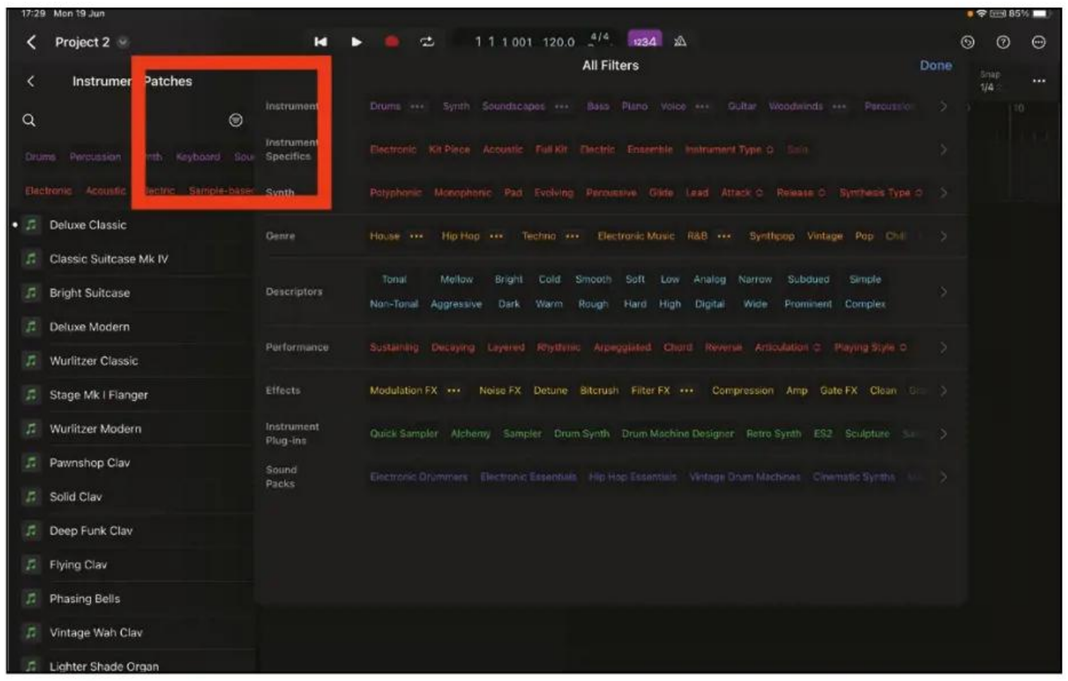
5 > One such window is one of the most important: the mixer. Access this with the bottom-right-hand icon. This can be impressively resized to cover most of the UI and again you can use a single swipe to go right or left across your entire range of inputs and outputs.

6 > You can also select different sections of the mixer – blocks of 12 tracks at a time, say – by clicking the top panel. And, of course, as it's multitouch, you can adjust multiple channel volumes with multiple fingers simultaneously. Try doing that with a mouse...

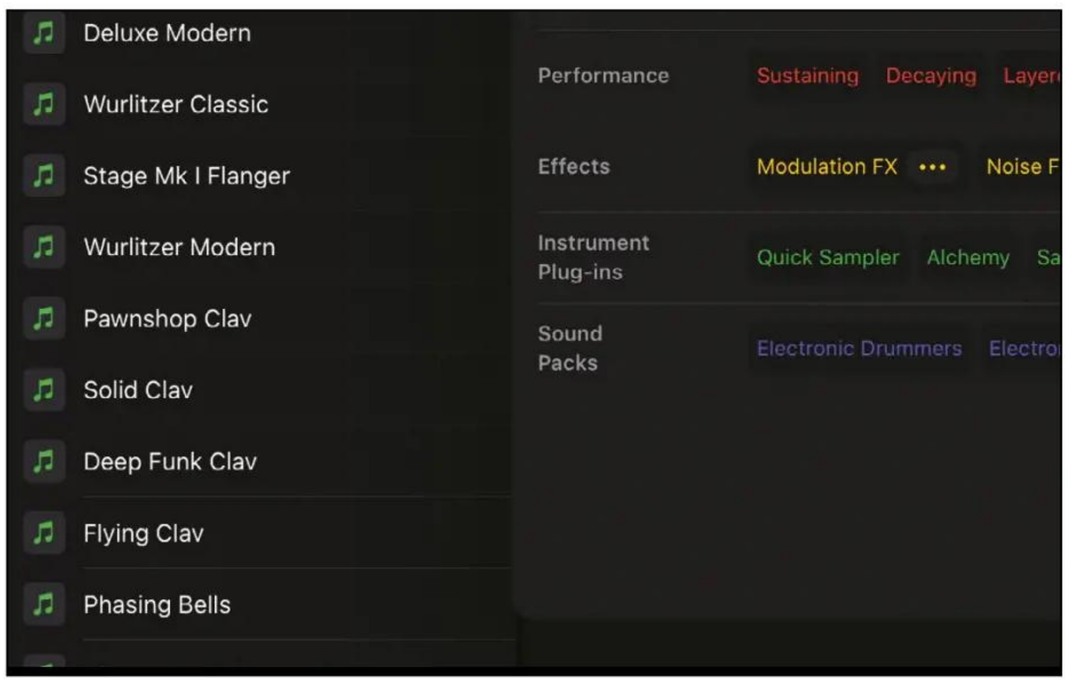
> Step by step 3. Creating a song part and exploring the new workflow



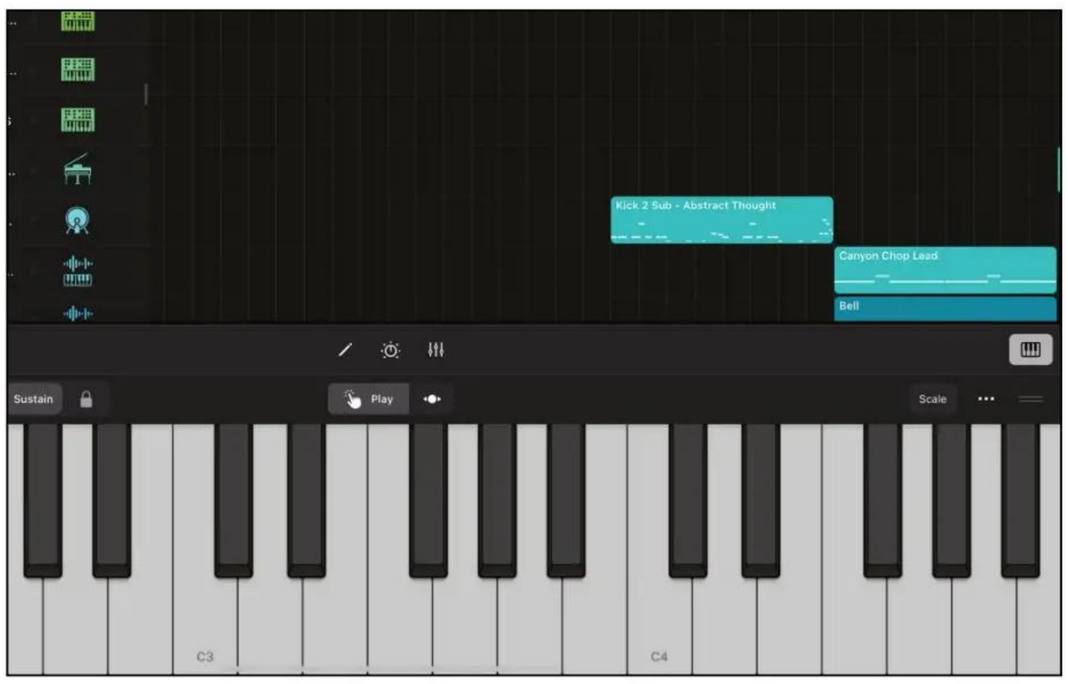
1 > Start a new project ('+' symbol top of screen). You can load example projects, sounds or lessons or start from scratch (hit Tracks or Live Loops). As with desktop Logic this means choosing a track type. There are MIDI (software instrument) and audio options plus Drummer for beats and Pattern. Hit any to open the new browser.



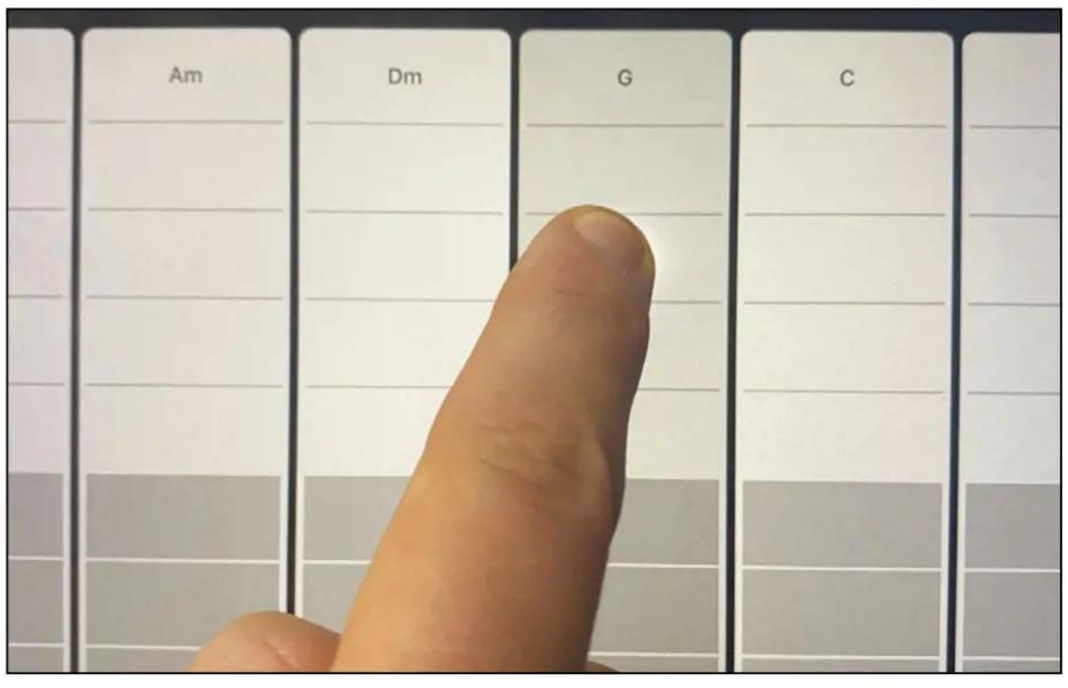
2 > The browser for loading in such sounds and instruments has been redesigned, making choosing what you want much easier. There's an all-new filter system to choose by instrument or description. A button on the right-hand side of the browser (highlighted above) opens up a huge set of filters so you really can focus in on a sound.



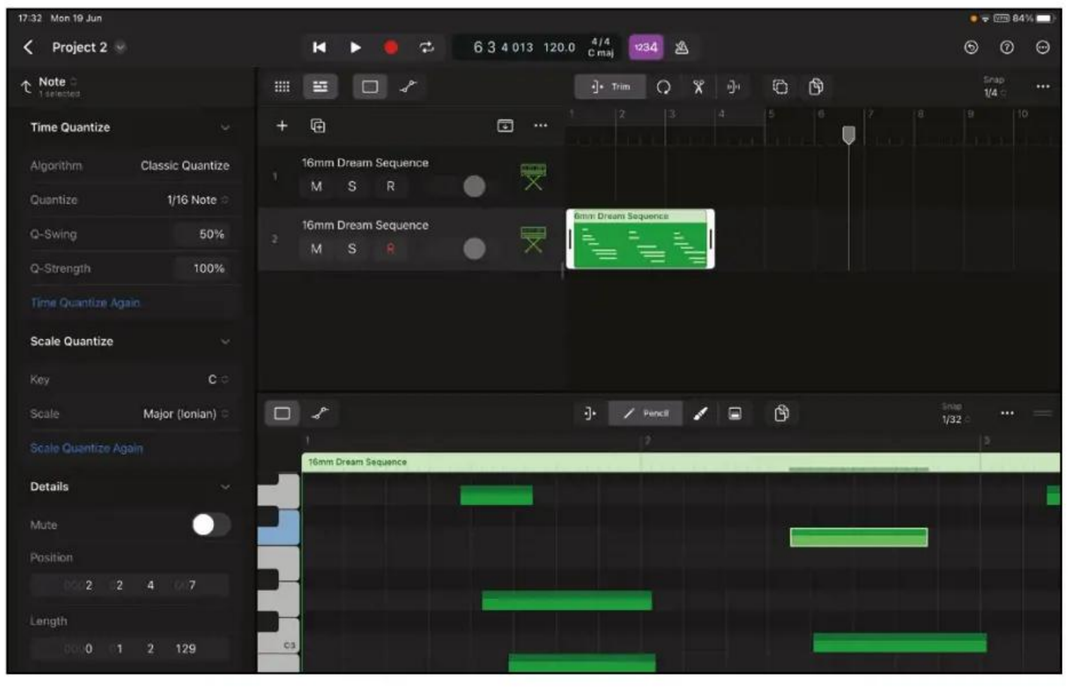
3 > As you filter, you'll be presented with a list of suitable sounds, and you can audition by clicking the notes on each one, which is a great way of quickly identifying what you want – even if you didn't set out with a specific goal in mind! Click and drag your chosen patch into the song and Logic automatically creates a track. Superb!



4 > Now it's a case of playing and recording your sound. For that we return to the Play Surfaces (bottom-right icon). Open the options by hitting the keyboard icon (bottom-left). Depending on your sound, you can choose a suitable way of triggering it here, the keyboard and drum pads being the most recognisable for melodic riffs and beats.



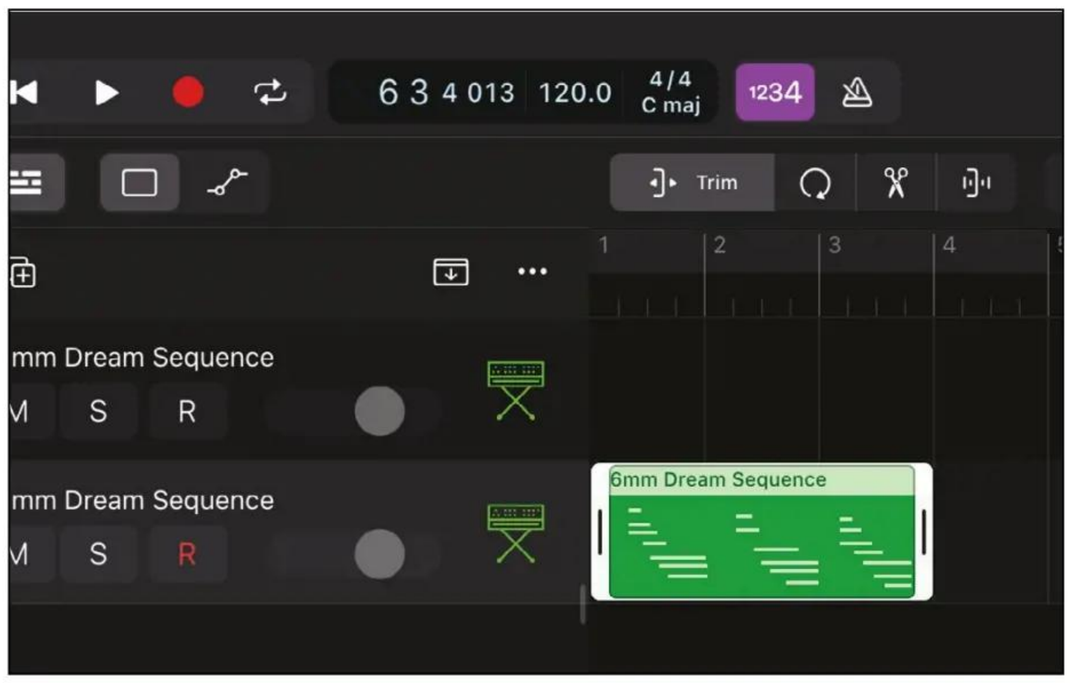
5 > But one of the easiest ways to get going with a song is to create a chord sequence. That might be harder in a standard DAW but here it is easy, just use the Chord Strips option which lets you play chords with one finger to create a cycling chord progression in seconds.



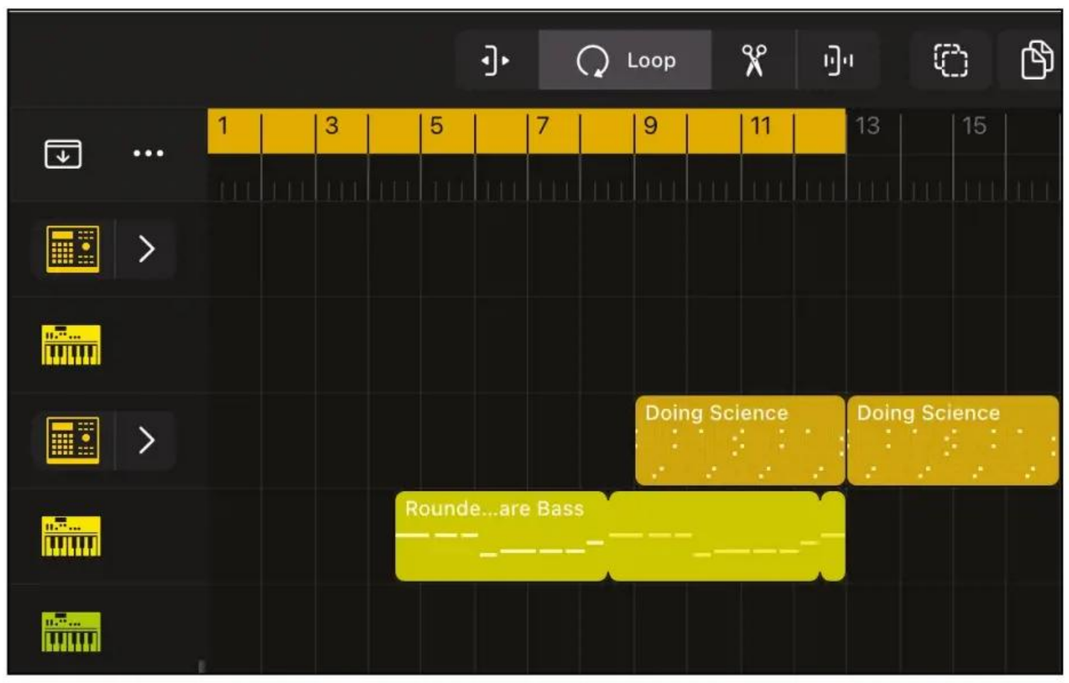
6 > If you need to edit the notes (length or position), return to the Edit screen (the pencil icon on the left above the Play Surface). Here you can also quantise notes by opening the inspector (bottom-left centre 'i' icon) and choose a quantise value from the drop-down menu.

> Step by step

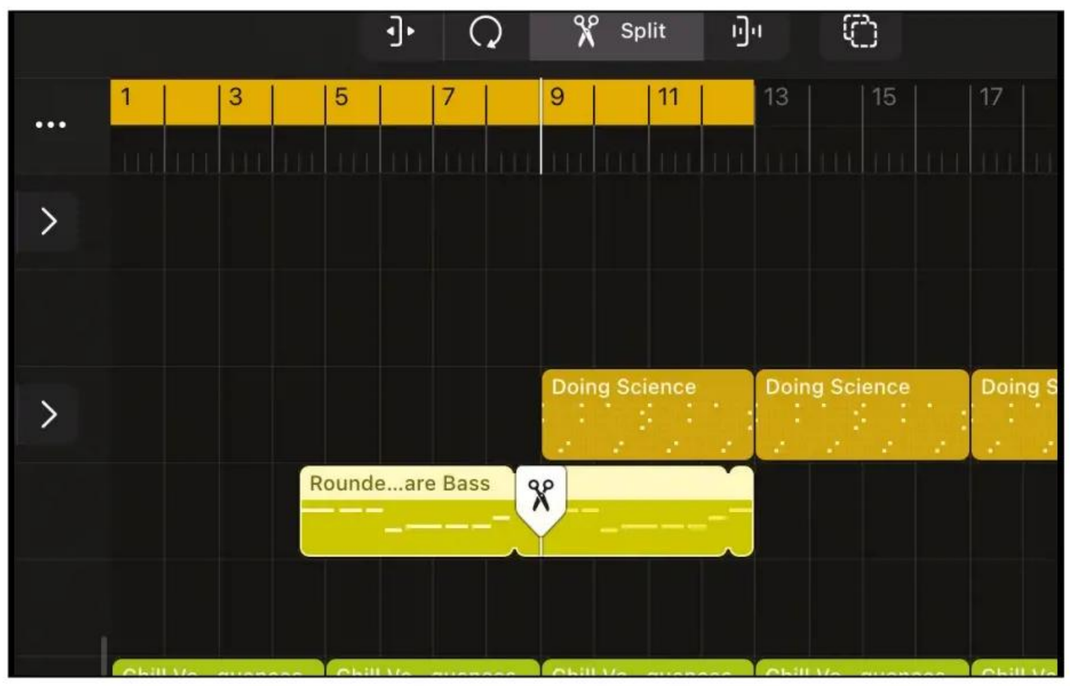
4. Arranging your song



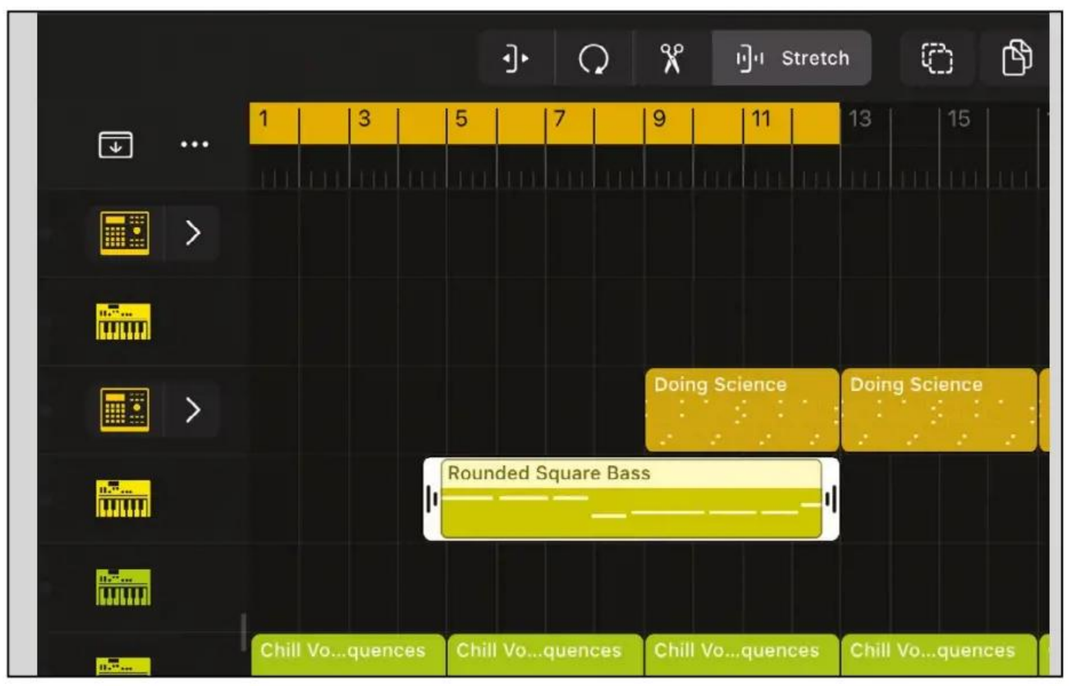
1 > For the last part of this tutorial, we'll look at arranging a song with the several parts that you could create by repeating steps 1 to 6 on the opposite page. To arrange these parts into a song, we'll start by focusing in on the icons above the main arrangement window. The left-hand one is Trim and allows you to resize regions.



2 > Then the Loop icon – second from left – lets you loop parts. Simply click on the greyed our area above the whole arrangement to loop (click and drag to adjust the size), or set loop points by clicking and dragging the loop handles on each region. Easy!



3 > The next Split tool is well implemented. You click and drag it to the place where you want to split a region and then drag it down to effectively cut that region and Logic zooms in so you can see it in close-up detail. Very neat.



4 > Timestretching – the next icon – is much easier than on desktop Logic. Once again handles appear on your chosen region and you simply click and drag these to stretch it to whatever you choose. This is amazing and so much quicker than you might be used to.

5 > The final two icons let you select and deselect multiple regions and – the important bit for arranging (!) – copy and past parts. Select this icon and simply click and hold a region and it will copy itself so you can drag it and paste it where you like. No more Option button.

6 > That gives a quick overview on track and song creation in Logic Pro for the iPad. We think you'll agree that the streamlined approach is superb and well implemented. It's the same Logic... but different! We'll be back with more in-depth tutorials soon. **cm**

15 questions with...

Tom Salta

Not content with being one of the video game industry's most acclaimed composers, Tom Salta has turned his attention to plugin development, with the wonderful Auto-Bounce taking the sting out of finalising Logic productions. We spoke to Tom about this life-saving new tool and what motivates his creativity...

> An acclaimed figure in the world of video game soundtracks, Tom Salta knows all too well about the time-swallowing pain of bouncing numerous different versions of his mix for different purposes. Frustrated by the creative time this was taking away from him, Tom decided to develop the new Logic-bespoke plugin, Auto-Bounce, to take the process off his hands. We were keen to find out more about what motivated his leap from composer to plugin developer, as well as learning about a prestigious career as a video game soundtracking luminary...

> "Every score that I do, I look for ways to go into the toy box and pull out certain gear. I try to set limitations for myself..."

1 Auto-Bounce sounds like it takes the stress out of stem bouncing. Firstly can you give us an overview of just what Auto-Bounce provides?

Tom Salta: "Absolutely. Auto-Bounce is the only plugin available that allows Logic users to fully automate the process of running stems, multi-tracks and mixes. Not only does it take the stress out of it, but you don't even need to be there! It does something that human beings don't need to do. One of the big missions with Auto-Bounce is to give people their life back. It's really about giving us free time, and not having to sit in front of a screen to do mindless, repetitive tasks. That's really what the mission was. As a Logic user, this is a dream come true. I was hoping this kind of thing would one day show up as a feature but it didn't, so in the end I decided to do it myself!"

2 So would you say Auto-Bounce is primarily a workflow speeder, or can it achieve things that you'd be unable to do manually?

TS: "It is definitely something that speeds the process up, and it can do that process quicker than a human being can. It wasn't even about that. It was about the scenario where a composer, a producer, or a songwriter has spent all day in the studio and is tired. Then, they have to be late to dinner because they have to sit for another hour running stems. Going one at a time, naming it, hitting Bounce. Human beings shouldn't have to do that. Auto-Bounce does it better and faster than a human being can do."

3 How long has Auto-Bounce been in development, and what first spurred you to make it?

TS: "It's been two years since we started to work on it. It was probably at least two or three years prior to that where I was proactively talking to companies about this. I didn't do this because I wanted to get into software development. I'm a composer – that's my thing. I did it because there was a great need. I had been talking with Apple about this, and Steinberg too prior to them automating stem bouncing themselves. Finally, two years ago I decided to just do it myself and make it happen. There's countless Logic users around the world and I'm tired of it. I don't want to sit here anymore doing this stuff. It's not necessary."

4 Could Auto-Bounce also be used with other DAWs like Ableton Live or Cubase, or is it exclusively Logic at this stage?

TS: "At this stage it's exclusively Logic. We haven't announced any plans to port it over to other platforms but we started where there was the greatest need and where I have the most familiarity. I've been using Logic since 1990, when it was called 'Notator' and was on an Atari ST. I'm a hardcore, die-hard Logic user, and that's where the need was. But never say never on versions for other DAWs."

5 While we've got you, we must ask you about your career. Going back to the beginning, when did you decide that a career path in music was for you?

TS: "Back in the dark ages. I'd say I made the transition into a professional music career in about 1990. Right out of high school. My original intent was to be a record producer, in the vein of Mutt Lange, Quincy Jones and Trevor Horn. They were my heroes and idols. I started professionally going on tour with the biggest R&B music star in the world at that time, Bobby Brown. That led me to tour with other acts like Mary J Blige and early '90s R&B artists, people like TLC."

"Eventually I came back and wanted to pursue my career as a producer so I got in the studio and stayed there. Throughout the '90s,

I worked on a myriad of different kinds of projects. From dance remixes, to working with people like Whitney Houston and Peter Gabriel. A nice array of artists. I produced loads of different genres. Then, 2001 happened. A lot of changes happened that year. One of the main ones was the introduction of high-speed internet. Along with that came music piracy. The whole Napster and Limewire effect had big ripples. Around that same time I began to realise that my aspiring career to be a record producer might be affected."

6 So what then led you into the realm of video game composing?

TS: "Right when the rollercoaster started going over the hill I got this sense that it was time to switch gear. That's when I simultaneously had the epiphany of writing music for video games. I'd loved both since the 1970s, so combining the two loves would be a great profession. I entered that industry as an artist, rather than as a wannabe composer. The artist name I came up with was Atlas Plug, and I created this brand-new, cutting edge, electronica big-beat album [which was released in 2003].

"Shortly after that, it started getting placements in video games. The music started appearing in games like *Crackdown* and *Project Gotham Racing* and *Need For Speed*. Then I took off the mask and got myself an agent. I then started pitching to score video games. That led me to score *Need For Speed: Underground* and *Ghost Recon: Advanced Warfighter*, and then ten years later I was scoring the *Halo* series and here I am today, still in love with video game music. I've never lost my roots and my love of electronic music, though."

7 So is Atlas Plug a dormant creative outlet for you now, or might it resurface in the future?

TS: "It's one of those things that's constantly been on my mind. I probably set a world record for an artist that had a record that did really well – every song of it was licensed and is still getting licensed today. That says a lot for an electronica record. So, you'd think I would follow up on it but my focus has really been on what's next, what are my passions and how much time have I got. But, I'm not closing that door completely. I'd love to come back and slip the mask back on once again!"

8 Your recent *Deathloop* soundtrack seems to have been universally loved. How was the process of making that soundtrack and reflecting that continually repeating game world?

TS: "That was a really wonderful project to work on. I finished that soundtrack nearly two years ago now. It was a really interesting process. Games have this notorious issue of dealing with monotony and dealing with repetition. It's music that tends to be heard for hours and hours, unlike a movie which is just a two-hour experience and then you're done. With video games, you're often dealing with 40 to 100 hours. Throw into that the idea that the game itself is based on repetition, it's based on living the same day over-and-over. If there was any danger of repetition it would be in a game like this. Fortunately we were able to handle that and it became this experience that a lot of people really loved. They enjoyed listening to it over and over.

"The other thing that made *Deathloop* very challenging, and unique in a way that I loved, was that it was an unusual premise. Not only story-wise, but musically. I'll be honest, the late '60s is not really my vibe. Most of the late '60s is not known for music that is aggressive and dark and cool. It's kind of like flower-child and free-love. Fortunately there was a happy ending to the story, I tried to turn it into something that was a really enjoyable experience by kind of exploring instruments from that time-frame, but approaching them in ways that sounded like the equivalent of someone from 2020 opening a room with these things, then scoring it today. I wanted to do it in a way that had a modern sensibility."

9 How has your career changed over the last few decades, and how has technology changed the way you write and compose?

TS: "Faster for sure, and the biggest paradigm shift is definitely the studio-in-a-box world in which we now live. The freedom to do what you want. There's gear that I coveted. I had posters of Neve 1073 consoles and Synclaviers or CS-80s. Now with VIs, I have all of it but virtual. Most of the stuff I use every day is virtualised plugins of those things. I still try and remind myself of this and channel that inner child. Throwing all these amazing pieces of tech together and seeing what happens. Every score that I do, I look for ways to kind of go into the toy box and pull out certain gear. I try to set limitations for myself. "

> "Ask yourself why you want a career in this. If it's about fame, money or glory, then don't do it"

10 If you could choose one, which of your scores are you most proud of?

TS: "Argh, that's like asking which of my kids I'm most proud of. Well, it's tough because we look back with rose-tinted glasses. That first one is a very special one, but you compare it against today. I'm not sure. To be honest, I'm really proud of my new score for *Outlast Trials* which nobody has heard yet. It is a terrifyingly scary score, that not only sounds scary but also melodically it's creepy. Not just the tone and texture of it. Everything about it is really scary."

11 Favourite software synth?

TS: "If we're talking about a desert island synth... For me, it's probably Spectrasonics Omnisphere. I think a big reason is that it can do so many different things. It's open-ended. Not only can it do real piano sounds and darn good string sounds, but I can get into the full spectrum of sound design and workstation stuff. It has endless libraries and is very approachable. It's loaded with numerous crazy effects *and* you can load your own samples into it. It does it all.

"There are personalities to synths, but this one can go way beyond its core personality and become anything. So they're the reasons why I'd gladly take Omnisphere."

12 So, besides Logic and of course Auto-Bounce, what software would you say has saved you the most time when mixing and preparing mixes?

TS: "Besides Auto-Bounce? Nothing! Off-line bouncing has saved me a lot of time to be fair. Next to that, nothing comes close to Auto-Bounce. There's a difference between saving time versus giving me my life back – giving me time. That's different and way more valuable. That's what it's all about. I'm a big advocate for mental health in the studio, and that's one of the big reasons behind Auto-Bounce. We spend too much time alone in front of a screen; there's no reason to spend any more time than you need to create. There's also a financial saving, as some people pay to out source their stem bouncing."

13 Might we see any more applications or plugins in the 'By Tom Salta' range?

TS: "Yes, I do have a list, but I won't tell you what they are. We're going to go public with this soon, but we did quietly release it in January. I wanted to play it safe, and I wanted to make sure there was nothing I overlooked. Sure enough, I've ironed out some things and we're adding some feature sets. People are thrilled about some of this stuff. It's a game-changer."

14 What advice would you give to anyone out there who might want to have a career like yours?

TS: "I'd say be very, very honest with yourself and ask yourself why you want a career in this. If it's about fame, money or glory, then don't do it. If you're fortunate enough to get those accolades then that grows old really fast. It will not give you the joy and satisfaction that you are meant to have in your life. When I was in high school they just opened this very small recording studio facility which nobody knew how to use. I basically owned that room. I love it. I did that because it excited me. It's about what you love. I tried to use that as my guidance. Too many people climb the ladder of life only to get to the top and realise the ladder is on the wrong wall! "

15 So what's next on your agenda, Tom?

TS: "I'm deep into *Outlast Trials* scoring. I'm almost finished and we're kind of wrapping it up. We might playtest a little more and try some things out." **cm**

HEAR MORE

Atlas Plug –*Truth Be Known*
bit.ly/cm_atlas

Welcome To My Battlegrounds (PUBG: Battlegrounds OST)
bit.ly/cm_battlegrounds

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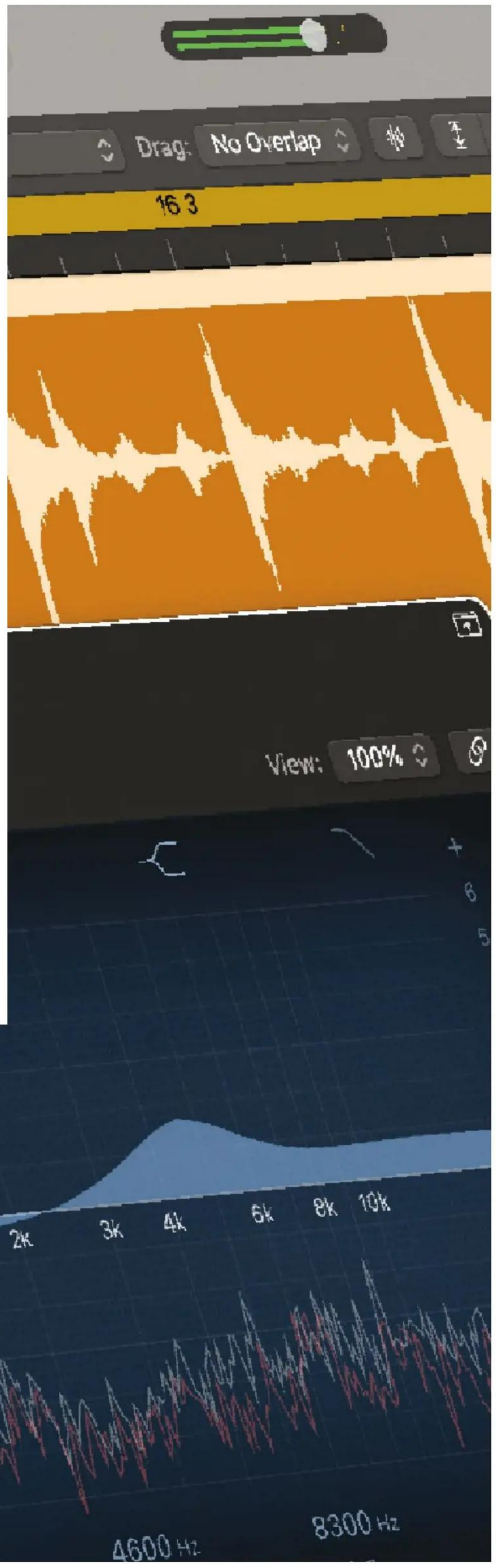
Equalising during the mix

This time we give you the lowdown on some basic EQ techniques that can help get things moving with your Logic mix



Equalisation (EQ) is one of the most important mixing tools, yet also one that's quite easy to get wrong. But there are a few simple methods that can really improve your chances of success.

Let's assume you already understand that an EQ includes various different shaped filters that allow you to boost and cut selected frequencies or frequency ranges. You'll typically find a pretty flexible EQ pre-assigned to all channels in your DAW and that in itself is a big invitation to get EQing. Even so, there is no requirement to EQ everything, and many would argue that you should use the minimum amount of EQ you can.

As ever in music production, there is no 'one size fits all' approach. Sometimes raw recorded sounds such as a multi-miced drum kit benefit from quite extensive EQ, whereas other raw sounds such as a solo violin need little or no EQ. Meanwhile, pre processed samples may be production ready and sound great on their own but still need specific frequencies cutting or boosting.

Whatever the target, we usually use EQ in a corrective or enhancing capacity, and at the mixing stage we combine it with level balancing to help everything fit together. In this tutorial, I'll be looking at two core techniques – sweeping and filtering – that can help you focus your EQing by finding the frequencies you actually want to process. Read on and we'll get started,

> Step by step 1. Sweeping and filtering

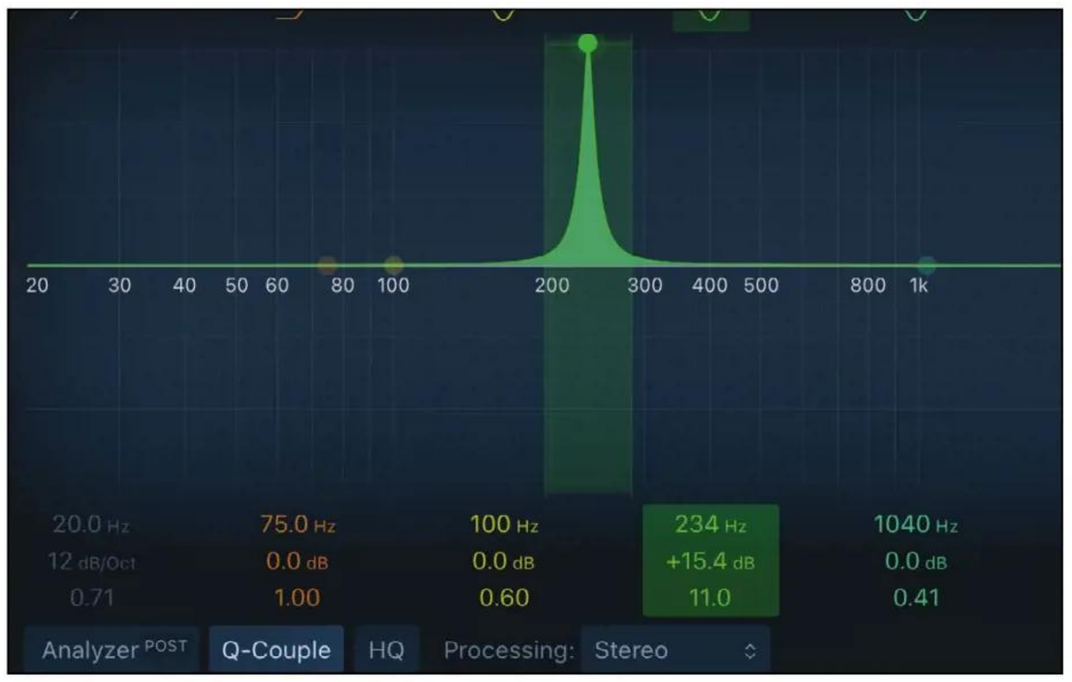
1 > Even though we have plenty of visual tools to analyse signals and pinpoint certain frequencies, it's important to learn how to hear these frequencies, and one of the best techniques for this is boost and sweep. This technique allows us to zone in on specific frequencies easily and quickly.

2 > The technique requires a parametric EQ with a peak shape band and an adjustable Q. It relies on the fact that we find it much easier to distinguish a narrow band of boosted frequencies and we can use this phenomenon to pinpoint areas and frequencies we want to boost or cut.

3 > We've inserted a suitable EQ plugin across our bass part, activating a parametric band and set the bandwidth quite narrow (ours is set to 10). Bear in mind some EQs allow very narrow bandwidth settings and these may be too narrow for the technique. Now add plenty of gain – here we've boosted by about 15dB.

4 > Our EQ includes a visual representation of the curve which clearly shows the boosted peak. We can easily see its width and the potential impact on the centre frequency and surrounding frequencies. Now by adjusting or 'sweeping' the frequency as we listen to the part we can zone in on its significant frequencies.

5 > You can do this quite quickly initially, and if you find that it's hard to pick out important frequencies, try widening the bandwidth until you find roughly the right frequencies. Once you have the right zone, narrow the bandwidth again to really focus on a specific area.

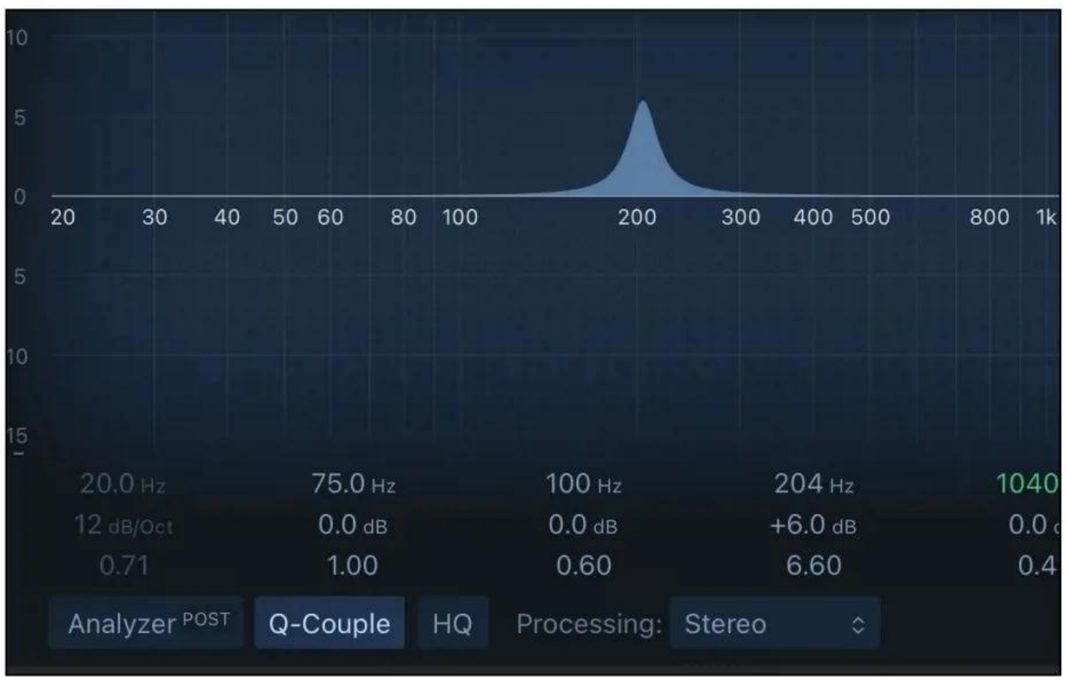


6 > Listening to our bass part, this has well defined notes and should be quite easy to process. Nevertheless, one high note in particular sticks out too much. By boosting and sweeping we should be able to enhance the relevant area, zone in on the frequency and use a narrow filter to notch it out.

> Step by step 1. Sweeping and filtering *(continued)*

7 > It sounds like the one problem note we spotted has a quite dominant frequency between 200Hz and 250Hz and by more precise boosting with a narrow bandwidth we've settled on 230Hz. In this instance we've decided to apply a -9dB cut at this frequency with a broader bandwidth (Q is 5.00).

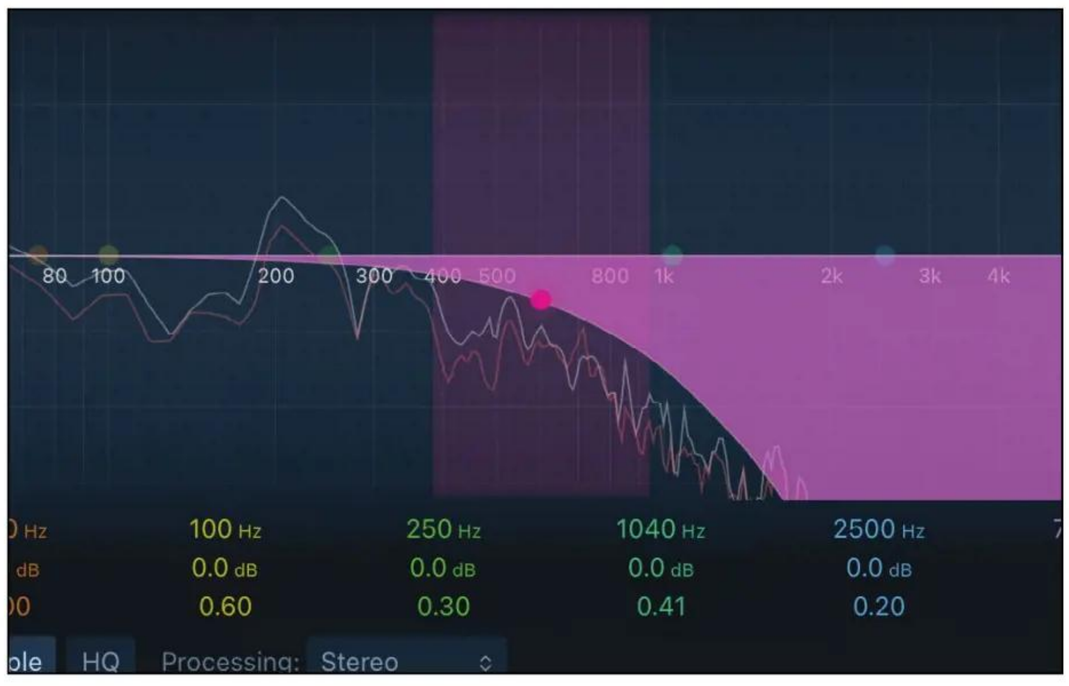
8 > Next we have a ringy synth part with a bunch of different gnarly harmonics. By sweeping the mid to high frequencies the unpleasantness is at its worst in the 2kHz to 3kHz area. Rather than try and pick out specific harmonics, we've applied a broad cut of a few dB, leaving the higher and lower frequencies as they were.



9 > Now on our blended drum stem we've swept the low frequencies and found the body of the snare at about 205Hz and the snare knock at around 338Hz. On this occasion we're going to boost just the body and have set a wider more natural shape peak (Q is about 7) with about 6dB boost.

10 > The sweeping technique uses an exaggerated boost to help us focus our EQ. In contrast the filtering technique relies on temporarily removing frequencies so you can better hear a specific frequency range. You'll need regular low pass and high pass filters which you can use individually or together.

11 > The technique is particularly effective when you're EQing more complex sounds or pre blended stems or submixes, like our blended beats stem. Here we've activated a low pass filter with a medium slope (24dB/octave) and low Q (about 0.5) so the filter shouldn't add any misleading resonance.



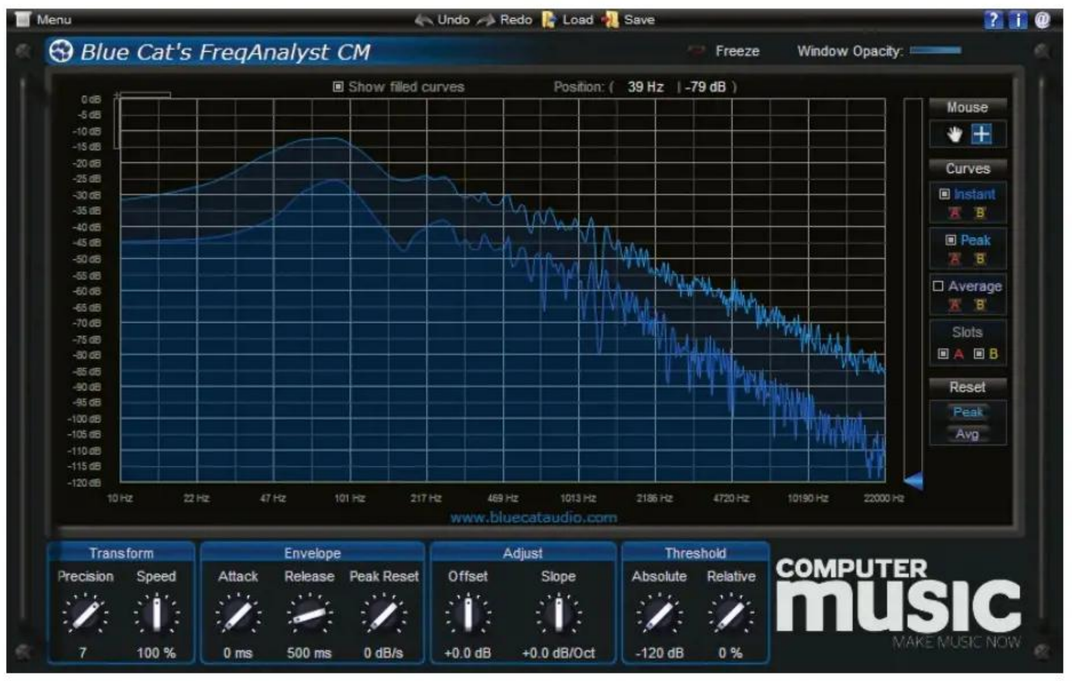
12 > By lowering the cut off frequency we're not distracted by the mid and upper frequencies. With the cutoff at about 600Hz we can hear the body frequencies for the kick, snare, congas and cowbell and even start EQing them. Once you're happy, simply bypass or remove the low pass filter.

PRO TIP

USING THE ANALYSER

One of the greatest benefits of mixing in a DAW is the plethora of available analysis tools, and EQs with their own in-built frequency spectrum analysers are a perfect example. At their best, these will show you a graphic representation of your EQ curve superimposed on a real time analysis curve (a good example is the EaReckon CM EQUA-87 equaliser in the CM Suite). This combo not only helps you EQ but also provides a great way to learn and understand the frequency make up of different sounds. If you don't have a suitable standalone analyser option in your DAW, why not try our CM Suite plugin FreqAnalyst CM from Blue Cat.

Of course, the visual feedback is only useful if we can interpret it properly. On the horizontal axis you'll find frequency, with amplitude on the vertical axis. The frequency scale is logarithmic, and each doubling of frequency, so each octave, is evenly spaced out. This puts 500Hz roughly in the middle, and means we'll often be viewing fundamental frequencies to the left hand side and higher harmonics to the right. Lower frequencies generate more obvious curves, and here you should be able to distinguish individual notes in a bass part.



Trance producer Armin Van Buuren understands the importance of EQ when mixing

Taylor Hill/Getty Images

RECOMMENDED LISTENING

DRAKE
GOD'S PLAN
When you've got multiple 808s to handle, pinpointing specific frequencies can be vital
bit.ly/cm_gods_plan

ARMIN VAN BUUREN
ANOTHER YOU (FEAT. MR. PROBZ)
EQ is a key tool when mixing the many competing elements and layers in a trance track
bit.ly/cm_another_you

BARGAIN BEATS

Over the next 20 pages we're going big on drum machines: programming, sounds, the best plugins and more. And for less cash too!

> Drums are the backbone of all the music we make (OK, not ambient music but you get our drift). As computer musicians, the drum machine is one of our most important tools, and Logic comes with plenty of beat-making options or samplers packed with drum hits ready for beat creation.

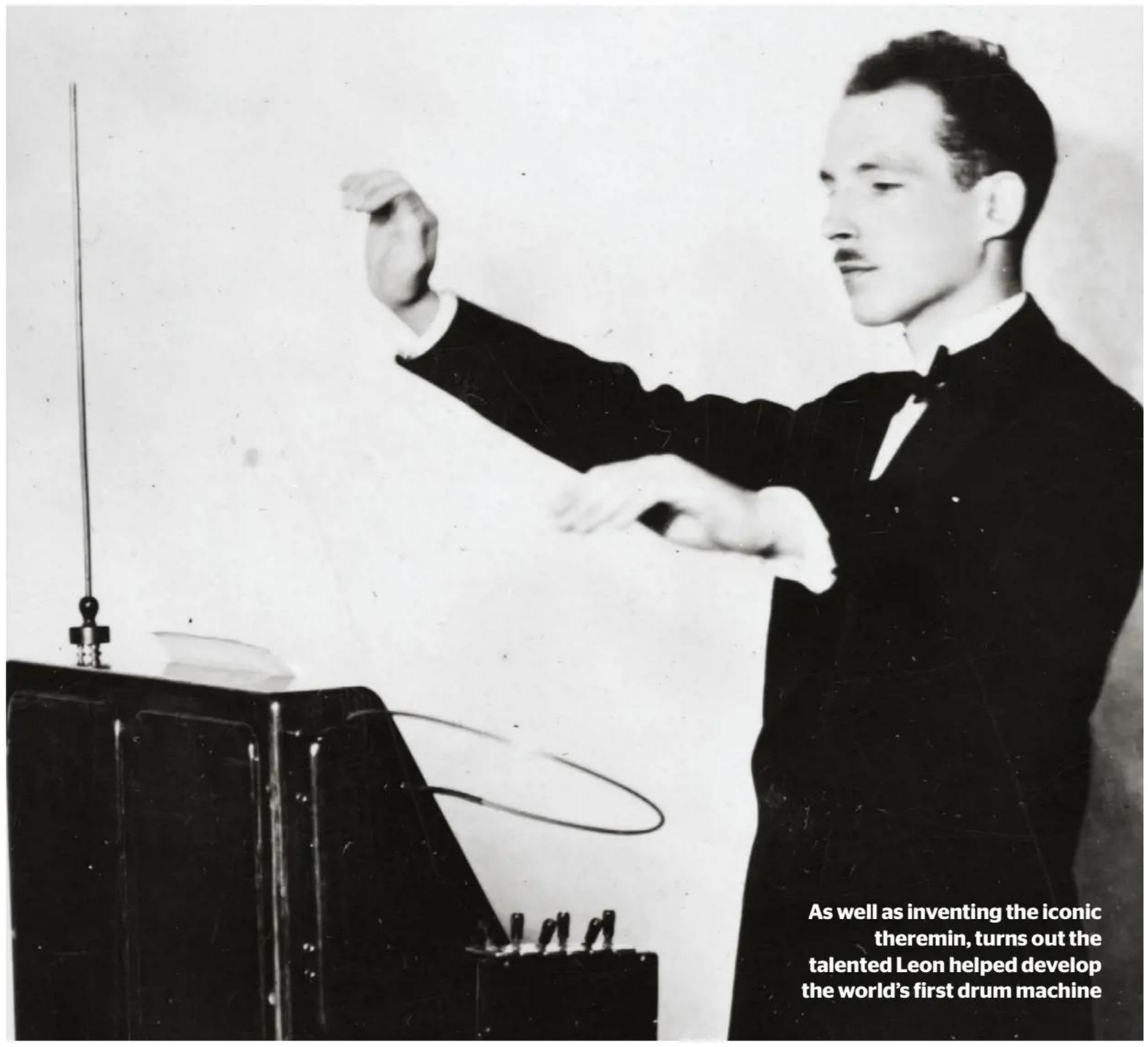
Over the next 20 pages we'll take you on a journey through all of your drum machine options, from how history defined what sounds we use today, the fundamentals of basic drum machine programming, through some of the best free and paid for drum machine plugins, right up to more complex programming used by some of the biggest artists of the last four decades. We've got mixing techniques, advice on how to create drum sounds from synths, and why your choice of sounds or drum machine emulation is so important within the genres of music you produce.

And, of course, in these challenging financial times, we'll always have an eye on the price and make sure you can do all of the above without spending a fortune. Software always delivers much more bang for buck than hardware – we know that. But if you combine this feature with all of the plugins from the mighty *Computer Music* Plugin Suite *plus* all of the drum samples that you can download for free with this bookazine, you can now make so many beats for so little cash!

So get your samples loaded, your plugins chosen and get ready to make some beats in whatever style you choose. As ever you can't totally enjoy the present without understanding the past so we've a short history lesson first...

Beating time

Drum machine invention started nearly 100 years ago, before heading to its heyday and the current renaissance. We track its progress



As well as inventing the iconic theremin, turns out the talented Leon helped develop the world's first drum machine

The Rhythmicon, invented and developed by Leon Theremin and Henry Cowell in 1930 is considered to be the world's first drum machine. Despite this grand title, it was played rather like a conventional music keyboard, with each note triggering a set of notes to be played, which in turn generated rhythmic patterns. The resulting cacophony was a highly polyrhythmic affair, where it could play quintuplets against triplets, with a minimum of effort. It was calculated that it would take over 455 days to be able to play every conceivable Rhythmicon pattern, or combination of patterns, in completion. Not quite the drum machine notion that we're more accustomed to these days.

In the tradition of the 'round-the-piano-sing-along, a market was beginning to reveal itself with a desire for rhythm generation units to accompany pianos and home organs. The Chamberlin Rhythmate was produced in 1949, and much like its sister product, the Mellotron, reproduced live players via tape loops for all your bossanova and cha-cha needs! It was a stylish, wooden unit, with a speaker on one side of the cabinet. With such fine woodwork on display, it was an excellent addition to any home!

By your side-man

It was a full ten years later that Wurlitzer released the Sideman. For the first time, since the Rhythmicon, a drum machine appeared that created sounds electronically, rather than via recording, but in this instance they sounded authentic and drum-like. The Sideman relied on a circuit board, which looked reminiscent of a clock face. A rotating arm would brush against contacts to complete a circuit, at which point a drum sound would trigger.

We can all agree that these three drum machines (and we're stretching that term) over a period of 30 years, isn't exactly pushing the beatbox envelope. But fear not, because things were about to get far more interesting...

Going Eko

During the early '70s, several beatbox machines made it to market, with one of the most important being the Eko Corporation ComputeRhythm from 1972. Working firmly within the analogue domain, the Eko is regarded as the first programmable machine, allowing six instruments to be programmed within a framework of up to 16 steps. This was an important concept, not least because it set a benchmark for many machines that followed including some of the most infamous from drum machine history. Due to their rarity, there are thought to be only 15 ComputeRhythms in working order throughout the world today, although on a pure design aesthetic, it oozes 70s retro charm, and would not look out of place on the set of *2001: A Space Odyssey*.

Roland's Ace

Ace Tone also produced a number of machines, before morphing into the Roland Corporation. The TR-77, from 1972, was designed to be flat enough to place on top of a home organ or miniature piano, incorporating a wooden music stand on its top. Roland had some catching up to do, to compete with the programmability of the Eko, and sure enough, with the development of microchips, the 1978 release of the legendary CR-78 saw chip technology used for the first time to allow chip-based pattern programmability.

The CR-78's success was quickly followed with the release of the first Dr. Rhythm DR-55. Rather than being released under the Roland brand, it was categorised as a unit to act as a backing device for guitarists, hence it was released as Boss product. Drawing on the success of the CR-78, it was a fairly cheap and programmable machine, though its programmability was limited to the snare and bass drum sounds and only 16 steps. Even so, the good Doctor has sealed its legendary status in history, as it was the first drum machine to be used by the band Depeche Mode. It was Dave Gahan's job, along with providing the band's lead vocals, to pick the appropriate pattern to play, and adjust the tempo to suit the song.

Arguably, it took many artists quite some time to appreciate what these basic drum boxes could bring to the creative and artistic tables. Bands such as Blondie and Culture Club embraced the CR-78, as did Phil Collins, who used the CR-78 alongside an eerie reverb, on *In The Air Tonight*, before the infamous and thundering drum fill explodes into view.

Roland's CR-78, as used by Blondie and Phil Collins

Planet 808

Roland consolidated their drum machine expertise to produce the now legendary TR-808 Rhythm Composer in 1980. It's difficult to imagine now, but it was initially a flop, not least because of its relatively high price tag. The problem for the TR-808 was that it was an entirely analogue sound source machine. This meant that many of the drums did not sound like their acoustic counterparts. Of

course we now view this as its endearing charm, but back then it was less convincing.

This argument was settled by the Linn LM1 the following year. This was the first drum machine to exclusively use samples. Its inventor, Roger Linn, hired a drummer friend to go around to his house where they recorded the drum samples. The legendary snare, with its huge fat sound, was recorded in the dry space of a wardrobe at Roger's house. Moreover, it was done very quickly in a single pass! The LM-1 attracted an enormous number of fans, and a user base that read like a who's who of music production. It also holds the status of being the first drum machine to be on a number one single in the UK. *Don't You Want Me* by The Human League hit the top spot at the end of 1981.

Rattle those cymbals

Roger Linn updated the LM-1, releasing the LM-2 in 1982. It was this model that coined the term LinnDrum, selling considerably more units than its predecessor.

In an attempt not to be outdone, Roland updated their 808 concept, releasing the TR-909 Rhythm Composer in 1983. In something of a hybrid move, they employed sampling technology for the cymbal and hi-hat sounds, while also utilising the new protocol called MIDI. Regrettably, it was still competing with the arguably more realistic and polished sounds from the LinnDrum. The 909, much like its predecessor, was also a bit of a flop.

It was left to the new bedroom producer generation to buy up the old and unwanted 808 and 909 units, and start making music with them. It was this creative groundswell that informed the sound of the dance and hip-hop movements, with producers offering a preference for specific instrument timbre from one machine or another. As the secondhand prices were rock bottom, these machines were literally as cheap as chips. Sadly, this is not the case now as both 808 and 909 drum machines will cost thousands on the secondhand market.

Elektron secured themselves a place in drum machine history with their 2001 release, Machinedrum

There are so many classic machines that we cannot mention them all, but we have to give passing praise to a few key beat-machines, namely the Korg Mini Pops series, Oberheim DMX, E-mu SP-1200 and Drumulator, and finally the Akai MPC series, which played a significant role in altering drum machine and sample usage in the live and production arenas.

The second Renaissance

As computer sequencing came of age in the late '80s, the demand for drum machines declined. Thanks to interest in hardware devices, also driven by the lust for Eurorack systems, drum machines enjoyed a resurgence a couple of decades later. Ten years ago, Korg did the unthinkable and released a small drum machine as part of their Volca range. Moreover, it was predominantly analogue-based, with sounds that could give the secondhand extremities an excellent run for their money. It was also relatively inexpensive and incredible fun to use.

At the opposite end of the drum machine spectrum, Swedish manufacturer Elektron were beginning to gain traction with their device called Machinedrum. Released at the beginning of the '00s, Machinedrum provided numerous reproductions of classic drum machines, along with extensive programming capabilities. It was well built, sounded fantastic, and provided all of the connectivity that would be expected with a modern day instrument.

Then, of course, we have software. You can now find reincarnations of pretty much any device ever produced, and if you cannot find a bespoke plugin, there are plenty of sample libraries culled from every machine produced in the history of drum machines. More importantly, there is software to suit all budgets, with many great samples being available for free.

The Rebirth of classics

With all this talk of classic kit, we have to make special mention for one of the most highly prized pieces of music software. ReBirth RB-338 first materialised in 1996 to huge critical acclaim, accompanied by extreme whoops of joy from dance aficionados. For the first time, ReBirth offered two TB-303s, a TR-808 and a TR-909, all in a single software application, and in a format that would give the exorbitantly priced secondhand market quite a run for its money. OK, it didn't sound identical to the originals, but those of us who used ReBirth were too busy creating nostalgic sequences to worry. Support for ReBirth was withdrawn in 2005, but it remains an often mentioned piece of software and one that lit the touch paper for other software incarnations of classics.

Drum pattern building

Whether you want to use drum machine hardware, software or just a set of samples, there are a few key indicators that will stand you in great stead before you start building patterns

In just the same way that you would rarely compose or produce a rock track without the right type of electric guitar sound, the same can be said for the myriad of different drum sounds that we have available to us, thanks to the extraordinary age of access to samples and drum software.

To amplify this further, there are so many genres and subcategories of commercial music, meaning the right choice for your drum sounds could make the difference between commercial hit, or designation to the download bargain bins.

Finding your sound

One of the most extraordinary factors when it comes to drum sound selection and choice is how in vogue certain sounds can be. In much the same way that fashions and tastes repeat every few years, the same can be true of drum sounds.

Let's take one of the most ubiquitous sounds of the last 40 years, Roland's TR-808. It has supplied everything from bright and breezy patterns, as heard on Marvin Gaye's *Sexual Healing*, to the beginnings of the hip-hop movement, with the likes of Afrika Bambaataa and the Soulsonic Force. But the 808's influence does not end there.

The 808 bass drum has provided the bass-boom in so many tracks, thanks to its elongated release tail, that it's become part of the hip-hop soundtrack for the last 40 years. Take this concept onto its next logical progression, and not only has the 808 kick been sampled more times than a James Brown scream, but once sampled, it has been used to play basslines. This was a common production pursuit throughout the drum & bass era, with a bass becoming something of a substitute for the bass drum, as drums loops were pitched upwards, resulting in an increase of both tempo and pitch.

While the 808 feels like it has never left us, the 808 hi-hat and snare have drifted in and out of fashion as the years have passed on by. Historically, the sound might be ancient, but they have never been more fashionable than they are right now, thanks to the trends for trap, where hats and snares will become interjected with rolling, repetitive and fast fills.

Away from trap, 808 snares and hats have always been popular for more ambient or techno production work, thanks to their ability to sound lighter in feel than other hats or snares.

Considering Roland's other accidental hero, the TR-909, the kick has always been a favourite for classic four-to-the-floor patterns or other dance and EDM deployment. Thanks to the controls that were available on the 909, it's possible to get plenty of low-end punch, coupled with high-end click, meaning that a 909 kick will always cut perfectly through a dance mix.

The 909 hats on the other hand, became something of an overused calling card throughout the '90s. In a hark back to the disco era of the '70s, the continual loop of closed and open hi-hat, on every beat of the bar, became a staple which was debatably overdone. There are examples of slightly more creative usage, from more electronic outfits such as Orbital, while the fat-sounding snare from the 909 seemed to complement the kick and hi-hats perfectly. The sound of the 909 infiltrated plenty of pop culture throughout the '90s, alongside the more independent underground exploitation.

Back to the future

One drum machine that has been less present over the last 40 years is the Linn LM-1 or LM-2 LinnDrum. It was the sound of the '80s, present in production work by just about everyone, from electronic outfits such as Heaven 17 to the heavily produced productions of Michael Jackson, in collaboration with Quincy Jones. Just like its Roland counterparts, the LinnDrum is enjoying quite a renaissance right now thanks to its use by bands such as Daft Punk and more currently, The Weeknd.

The LinnDrum, with its clicky-kick, fat snare and realistic hi-hats, was always a favourite with creative artists

The LinnDrum, with its clicky-kick, fat snare and realistic hi-hats, was always a favourite with more creative and experimental artists. Back in the '80s, Prince always liked to play around with the tuning of the onboard drum samples, placing sounds such as the rim shot or clap at a much lower pitch, and creating a very unique drum palette which became his calling card. Coming back up to date, artists such as Lindstrøm have found a home for the classic Linn sound in a more mainstream sense, where it reverts back to its initial intent by just providing a perfect groove and back beat for a track.

New contenders

If your production work is going to lean specifically in a certain direction, it will be up to you to decide what degree of reliance you must place on sourcing the right sounds. In considering where you go, it is important to mention the substance that can be created within a track by going somewhere different for your drum sounds. Let's not beat about the bush, all drum sounds are largely derivative, in the sense that a bass drum or kick serves a purpose, regardless of style of music. Your decision is how classic you want that sound to be, or how far you wish to remove yourself from the status quo.

With this in mind, it probably won't come as a surprise to learn that even with original packs of sampled sounds, many more ubiquitous samples may sound very familiar, because they have been drawn from the classics but with additional processing or sound design. With all the technology we have at our disposal, this is an option which is open to us all, even within a budget or free DAW.

Try bringing up an 808 kick, with a long release tail and see what happens if you put a bitcrusher or distortion plugin over it. It might just inspire you to move in another direction sonically, which could really set your work apart from the rest of the crowd.

To sync or not to sync

Thanks to the plethora of plugins and samples that are available to the drum machine enthusiast, you might be confronted by the eternal question of whether to sync a drum machine plugin, or merely trigger samples from within your DAW.

If we take an example of any plugin which is specifically designed to provide both sonic and pattern inspiration, the chances are you will find

The Roland TR-808 plugin allows comprehensive onboard programming, via its dedicated sequencer page

an edit page, laden with buttons to initiate the sounds to play within the context of a pattern. Hardware drum machines often tend to work on the basis of employing one-bar buttons, which can then be chained together to create entire songs. There are extensions to this philosophy, with more up-to-date drum machines where patterns may be extended beyond the single-bar limit.

Creating a pattern can be relatively quick and easy, and moreover, it's a truly enjoyable and inspiring part of the production process. It's great to just get your ideas out there. Where it gets more complicated is with the process of them deciding your form, and placing your patterns in the required order. If you think about it, when you're in the middle of the writing process, you may well find yourself having to undo the pattern and song structure within your drum machine plugin. This might explain why the vast majority of us producers tend to work within the DAW, as it can be far easier to move things around. The flipside, of course, is that working this way within the DAW can be more labour intensive initially, when you just have that flurry of creativity to get out into the open.

All drum machine plugins, at least the ones that we are aware of, should seamlessly synchronise with the tempo of your DAW. This could be of huge benefit if you decide you want to use a preset pattern from within a plugin.

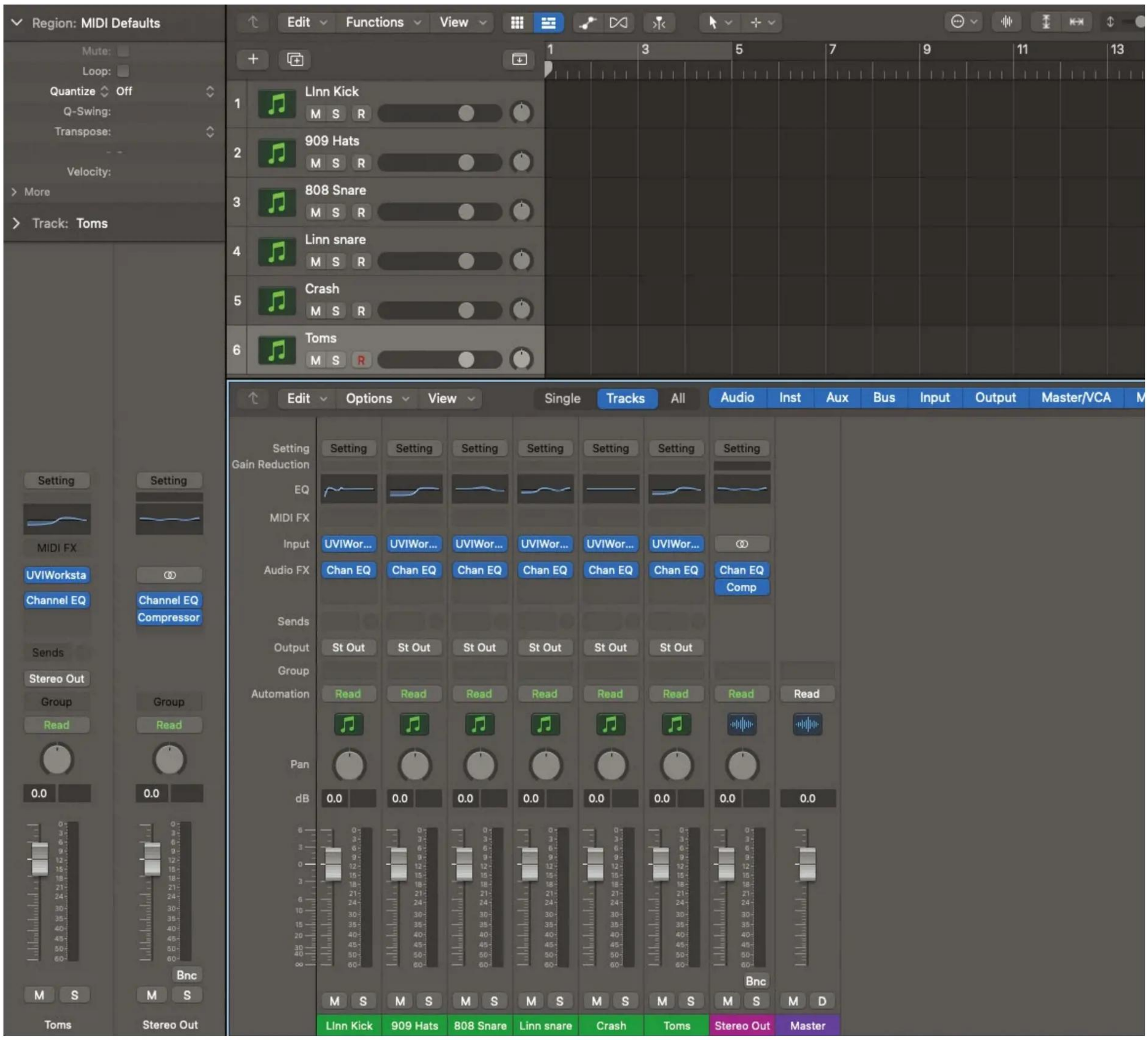
Above all, it doesn't really matter which way you work, as long as it works for you.

Multi outputs

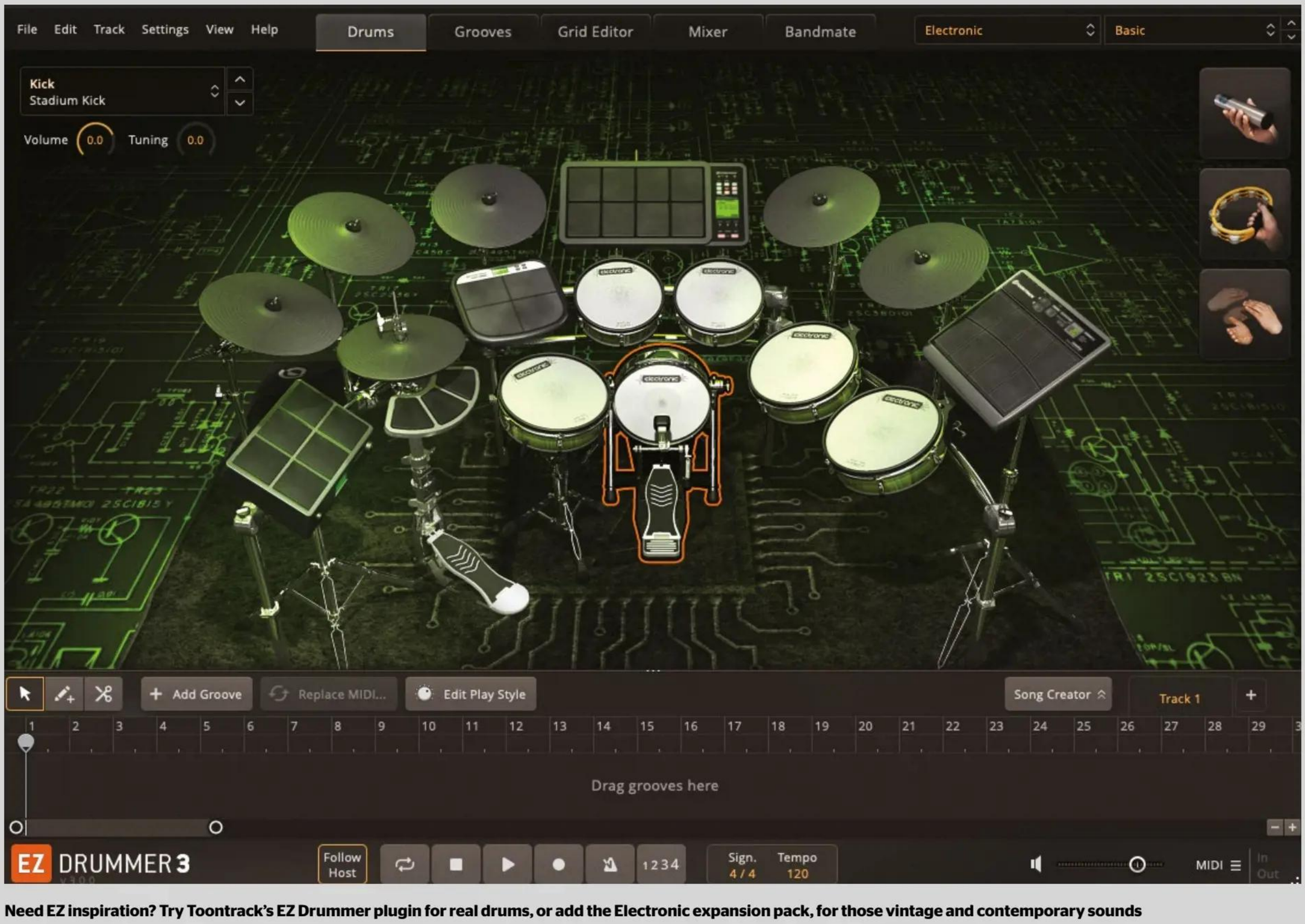
If we continue thinking about the pros and cons of working inside or outside of the plugin, it is important to consider how you wish to mix your drum sounds.

If you choose to work with drum samples, whether they be from within a package such as Kontakt, or just your DAW-bound sampler, having different sounds on separate audio instrument channels will make the mixing process easier. Working this way means that you can alter basic elements, such as equalisation, at the per drum level, without applying your setting to all sounds. Many reputable plugins are equipped with a multi output functionality, meaning that you can use a single instance of the instrument in question, but route the audio path so that you can treat each drum element separately.

Whichever method you choose to adopt, it is always worth sending your drum sounds to some form of summing buss. This will allow you to easily change the volume of your drums, using a single fader, while also allowing compression or overall equalisation to be applied across the whole kit. Always consider your workflow. Multi output instruments can be a bit of a pain to set up, so if this is something you are intending to do on a regular basis, treat yourself to a bespoke template, which takes on board all of your programming needs.



Is it time to template? Our CM basic drum template has our favourite drum sounds, per-channel EQ settings and backend compression. All ready to record and go...



Need EZ inspiration? Try Toontrack's EZ Drummer plugin for real drums, or add the Electronic expansion pack, for those vintage and contemporary sounds

The real deal

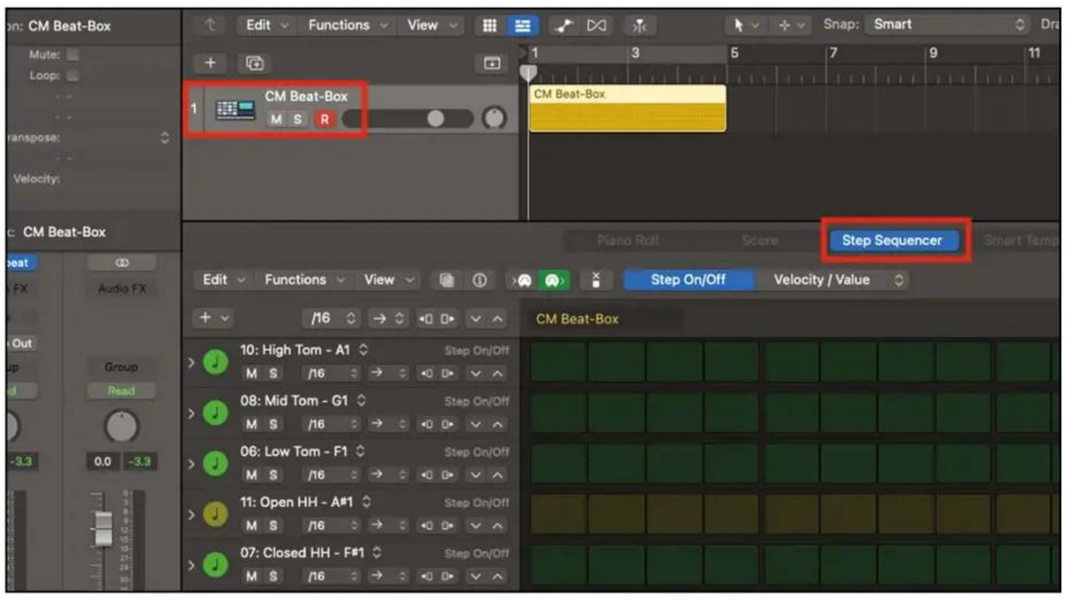
In the early days of drum machines, drummers were particularly brutal with their views on the emerging technology. In their view, drum machines did not stand up next to the sound of a real drummer. In many respects, that's not really an argument because we have now stretched the concept way beyond that simplistic comparison. However, if you do yearn to sound like a real drummer, but with drum machine sounds, there are many things you can do to help achieve an appropriate outcome.

You could try playing the drums yourself, in real time, in order to try and evoke the feel and groove that you want. If that doesn't work for you, try visiting companies such as Toontrack, who have a multitude of MIDI drum groove templates, which can be used to either provide the groove for your track, or with a little further know-how, be analysed from within your DAW to create a groove template to place on your drum track. Of course, you might just want to sound like a machine... for many styles of commercial music, that could be exactly what's required!

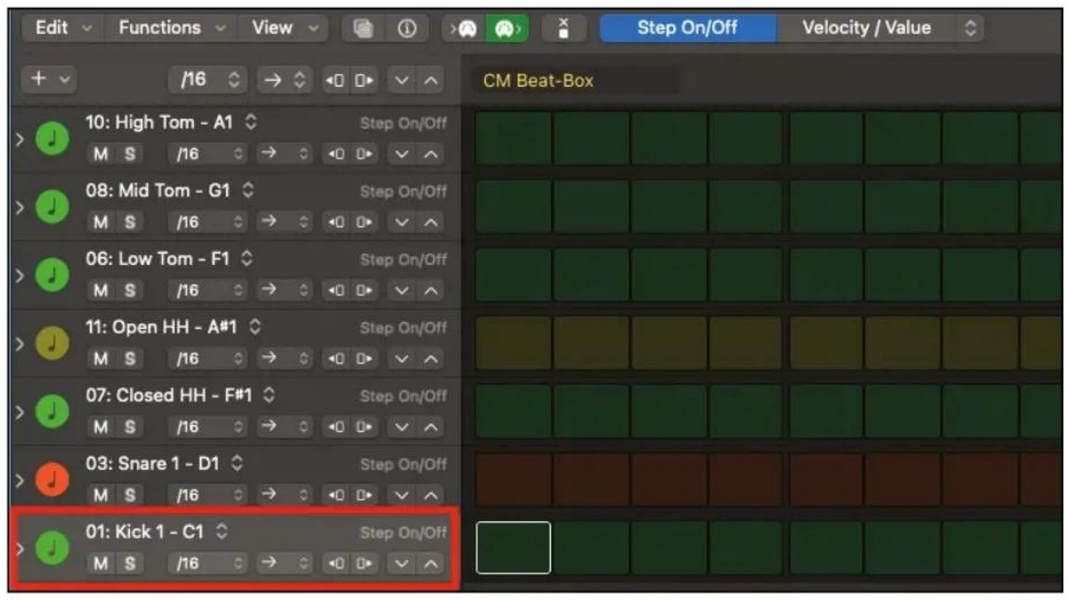
Basic drum pattern editing

Let's take a back to basics tour around a typical drum editor and look at some basic arrangements

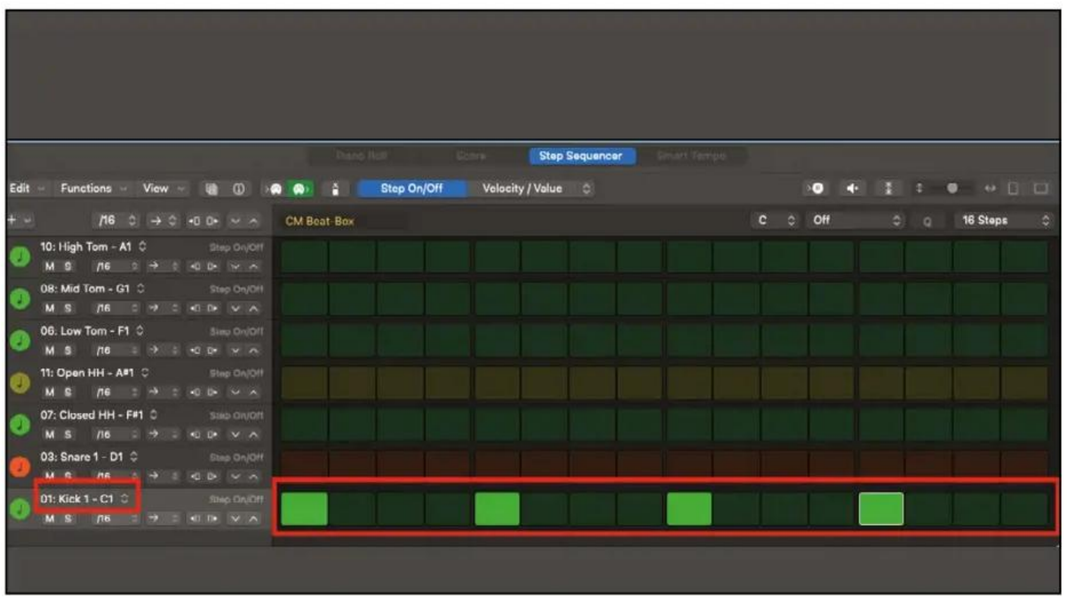
> Step by step 1. Basic arrangements



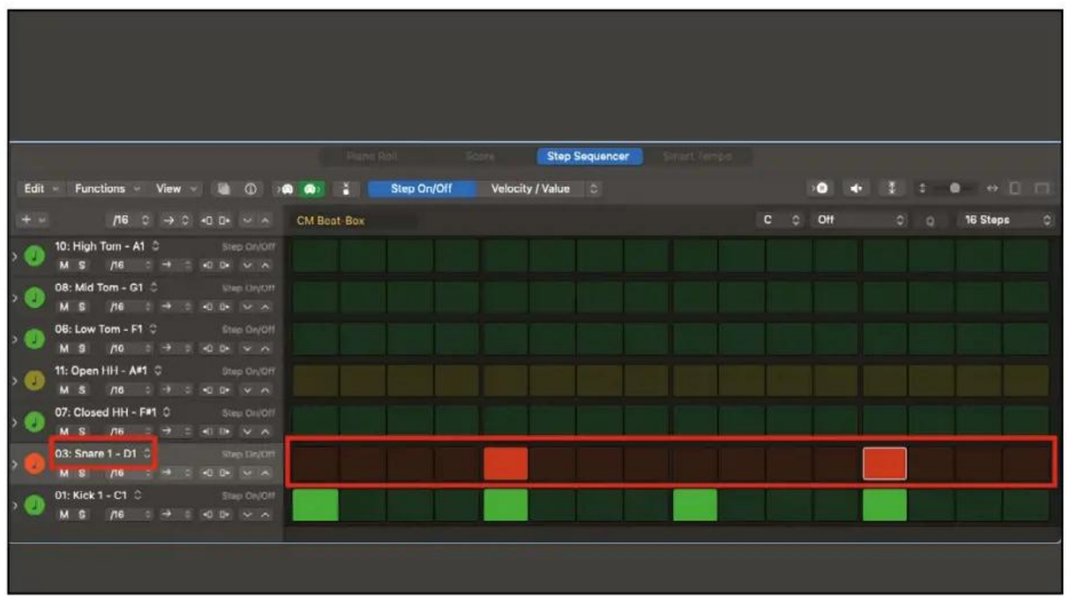
1 > Logic Pro is equipped with a drum sound collection and Beat Machine for programming drums. As we're concentrating on programming beats in this tutorial, just bring up a basic set of drum sounds, that appeal to your musical or production sensibilities. We're using a simple one-bar editing template, divided into 16 steps.



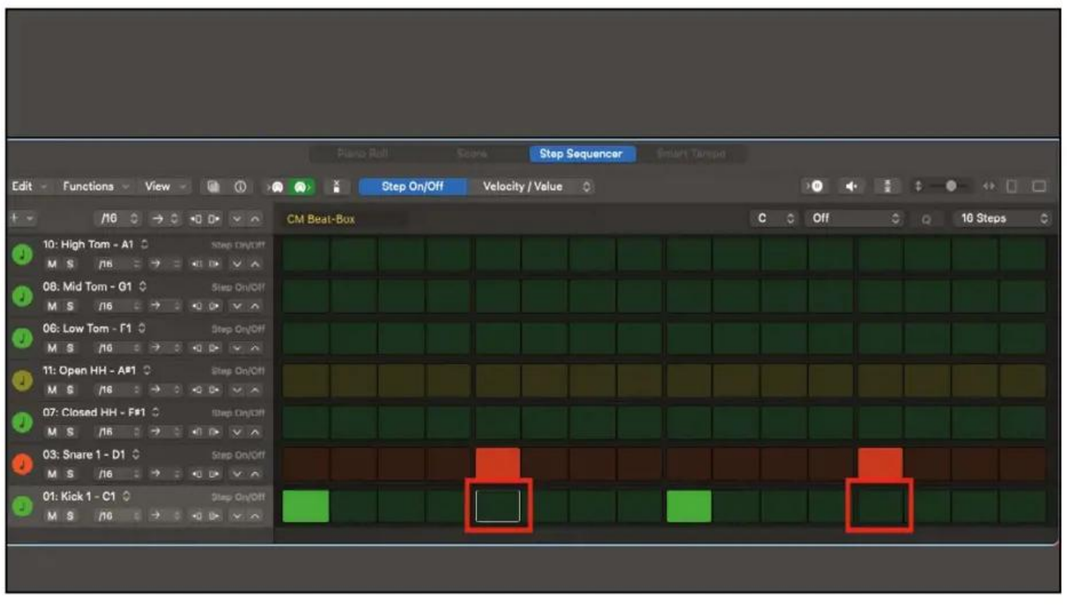
2 > Let's begin with the bass drum, often called the kick. Some years ago, several companies pooled their hive-minds to create the General MIDI Drum Map; this stipulated which drum sounds would be assigned to which notes. It was agreed that the kick would reside on note C1, which is often the lowest note on larger keyboard controllers. You can normally see the note name, within your editor.



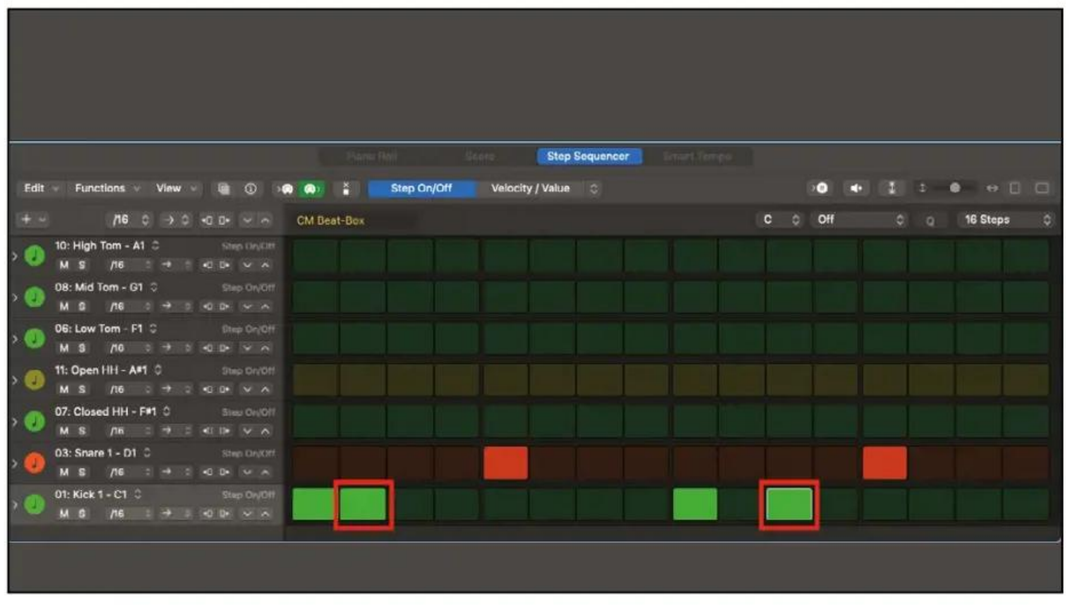
3 > The most basic kick drum concept for all commercial music, is known as the four-to-the-floor pattern. The basic idea is to provide a constant pulse, with a kick drum on every beat of the bar. Just about all other kick drum patterns are derived from this starting point.



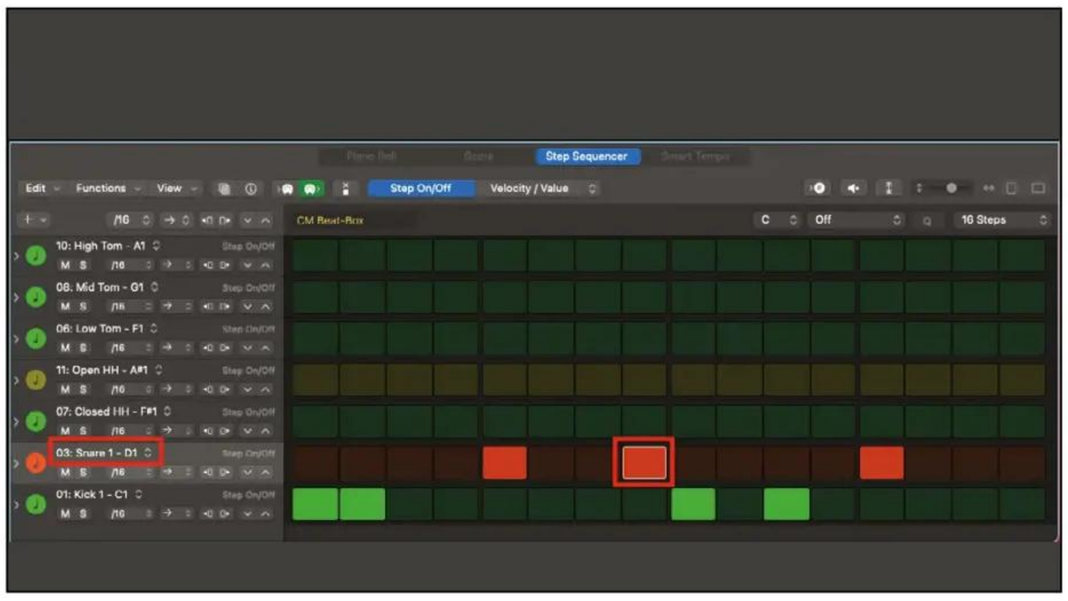
4 > Following our concept back to the African traditions of stamping and clapping, we'll use the snare sound much like a clap. This means that we'll place a snare trigger on beats 2 and 4 of the bar. The GM Drum Map dictates that most snares are located on note D1.



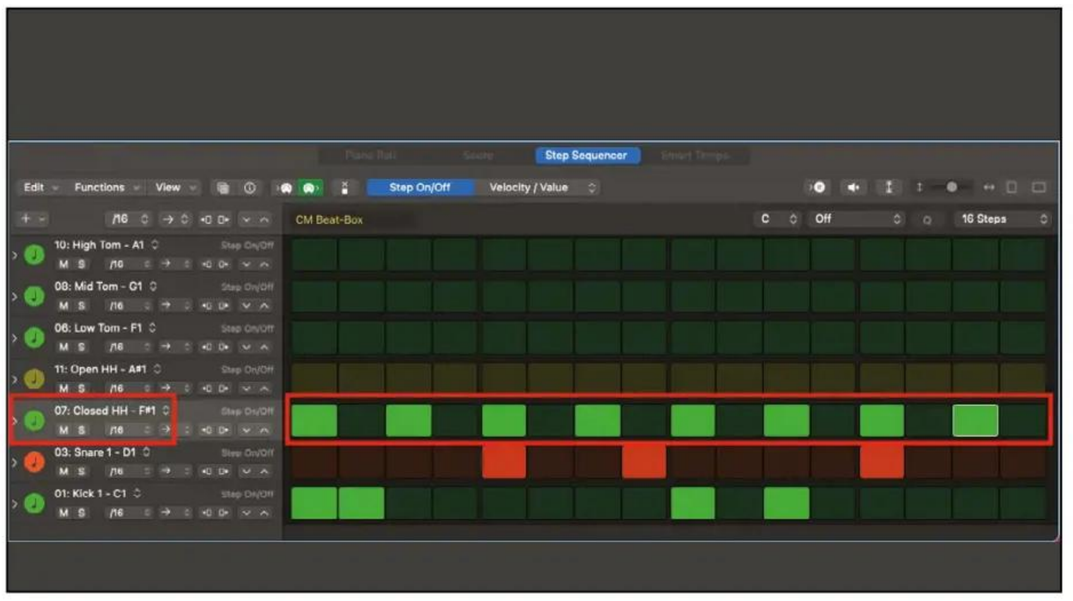
5 > In order to create a different type of colour or even music genre, we can alter where the kick drum is triggered. A very common concept is to remove the kick on beats 2 and 4, leaving duties exclusively to the snare. This will result in a slightly lighter sound, where the kick has been removed.



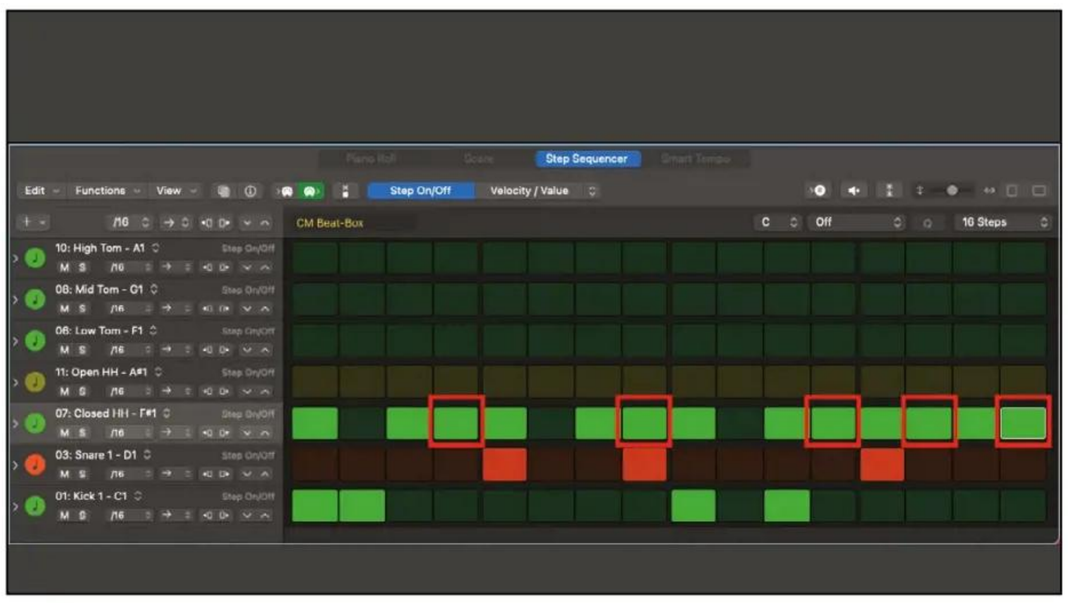
6 > As well as removing the kick from where it might be surplus to requirements, we can also add additional kick drum triggers, to provide a greater concept of groove. We have added two kick drum triggers to this example, to create a classic hip-hop pattern, originally inspired by Kraftwerk.



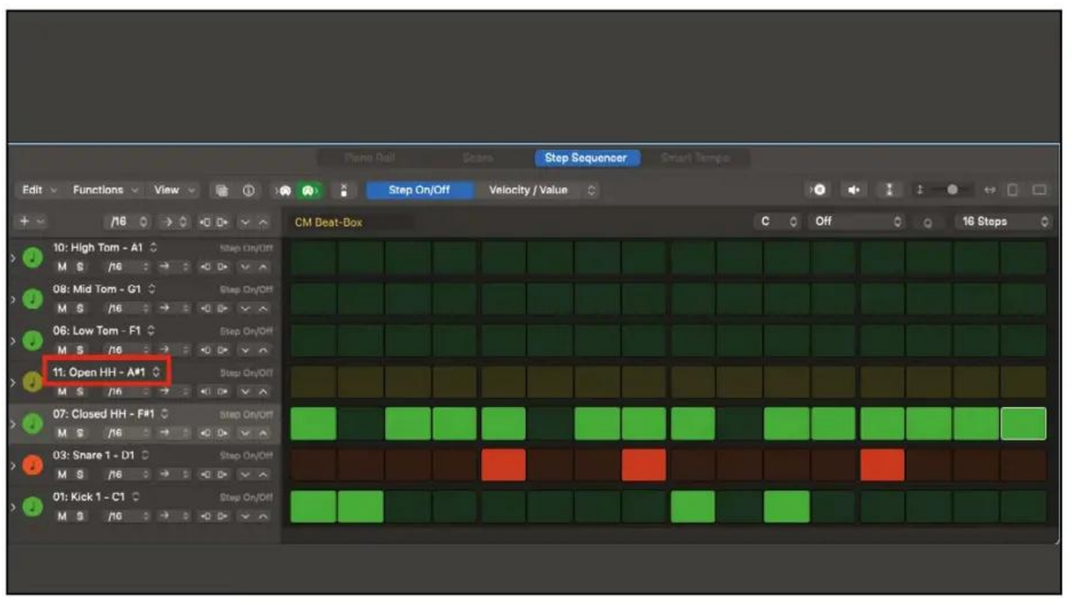
7 > In a similar sense, we can also add triggers to the snare drum pattern. In our example, we have merely added a single note, that leads immediately into a kick drum trigger on the next beat. This would be a typical playing technique for a real drummer.



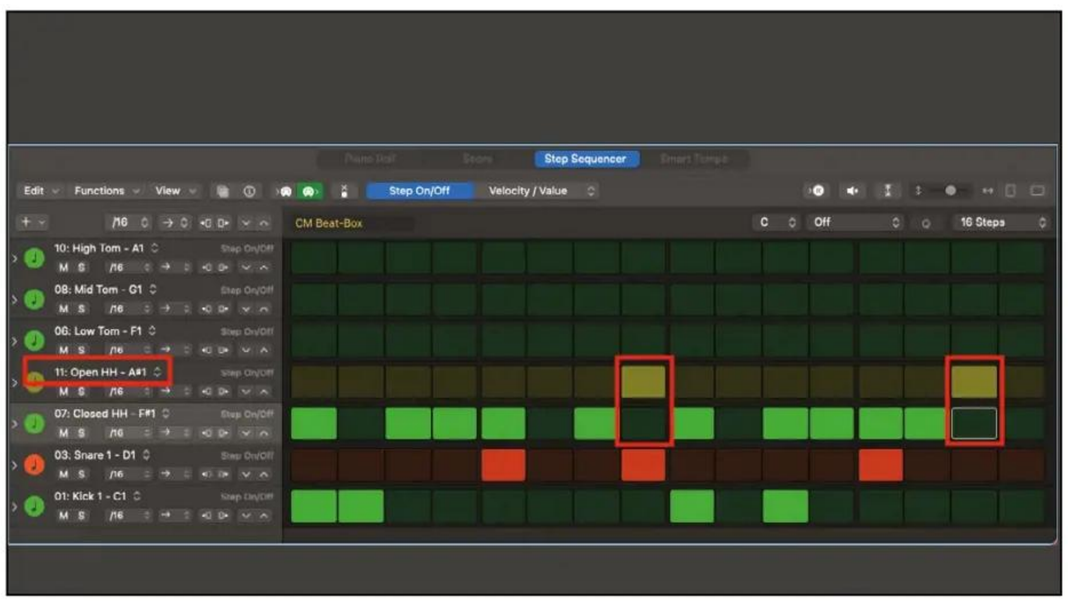
8 > While our kick and snare pattern provide the basic backbeat, the role of the hi-hat is to sub-divide the groove further. We'll begin with our closed hi-hat sound, which is playing eighth notes. It's very basic, but incredibly effective. You'll probably find the closed hi-hat on note F#1.



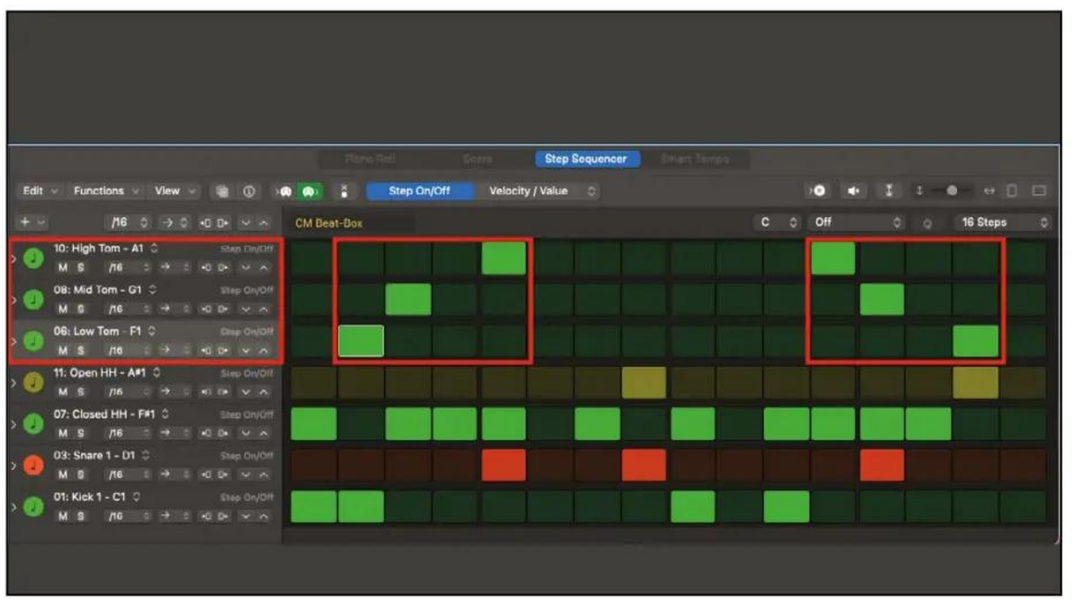
9 > To create an even greater sense of forward momentum, try adding the odd 16th note to your closed hi-hat pattern. Adding a few notes, rather than filling all gaps, can often be far more effective as a groove concept.



10 > The concept of the open hi-hat sound, is heard where the two cymbals sizzle together. Consequently, you cannot play both a closed and open hi-hat simultaneously, at least in theory, although some drum machines do allow this. You will most likely find your open hi-hat sound on note A#1.



11 > Just like any drum sound, you can try placing it anywhere you like, and experiment to see if it sounds good. A common technique is to place open hi-hats toward the end of a musical phrase or bar, as we have demonstrated in our example. Note that we have disabled the closed hi-hat, where the open hi-hat plays.



12 > One final element to be considered is adding toms. Normally in groups of three (high, mid and low) they can be particularly useful for providing drum fills, towards the end of musical phrases or complete patterns. In electronic music, it can also be quite common to use electronic tom sounds as an intrinsic part of a one-bar pattern, a little like we have in our example.

Top 6 paid-for drum machine apps

Whether you want vintage or modern drum machines or sounds, there's never been a better time to find the grooves to suit your production. Here's our guide to the best paid for drum plugins and samples around

Roland Cloud **TR-606/707/727/ 808/909**

Mac/PC from $9.99/mo

The Roland Cloud continues to offer some of the best virtual representations of classic synths and drum machines, with no shortage of drum machine content. While the 808 and 909 don't require further detail (see previous pages), the kitsch-ness of the 606 is superb, with pseudo-Linn stylings available from the 707, and Latin accompaniment from the 727. The plugins can be purchased outright, or paid for monthly/annually on subscription.

www.roland cloud.com

Toontrack **EZ Drummer 3 + EZX Expansion libraries**

Mac/PC from €165 (EZD3) + €80 (EZX)

While EZDrummer 3 is predominantly an acoustic suite, the bewildering collection of expansion packs (EZX Packs) present some incredibly useful sounds that are worthy of exploration. The Electronic EZX is a good case in point, combining humanistic grooves with vintage and produced electronic sounds, with onboard sequencing and song structure capability.

www.toontrack.com

Sonic Charge **Microtonic**

Mac/PC $99 + VAT

Microtonic is a relatively unique drum and percussion synthesiser, which combines real-time sound generation with a pattern-based drum sequencer. All sounds can be edited to a considerable degree, while the Microtonic Patternarium provides access to a vast library of inspirational presets over the internet.

https://soniccharge.com

UVI **BeatBox Anthology 2**

Mac/PC €149

Operating from within UVI's own Workstation plugin, BeatBox Anthology 2 provides sampled versions of 111 hardware drum machines across 11,000 samples. It is a pretty definitive collection of production ready sounds, complete with a built-in sequencer and the ability to drag and drop MIDI grooves.

www.uvi.net

iZotope **BreakTweaker Expanded**

Mac/PC £216.25/$249

Another superb source for beat-driven inspiration, BreakTweaker is packed full of terrific sounds and sequences. It is particularly good for triggering patterns live, or creating instant inspiration while writing tracks in the studio. Everything can be edited significantly, for immediate flexibility.

www.izotope.com

Spectrasonics **Stylus RMX**

Mac/PC £249

While RMX is beginning to feel like the grandfather of younger plugins, it still provides a huge source of fantastically produced loops, with an enormous amount of content in the form of single hits. All of the classic drum machines are represented here, along with many unique and interesting sounds, pushing the concept further.

www.spectrasonics.net

Top 6 free drum machine apps

Creating fine drum sounds does not have to cost the earth, or in fact anything at all. Here are six of the best free drum machines and sound sources available

Witech **TheDrumSource**

PC

Armed with an onboard sequencer which adopts a similar styling to most drum machines, TheDrumSource is a sample-driven plugin which allows the user to import their own samples. It comes packed with plenty of samples to get going, and provides Sync Mode for running in tempo with your DAW.

https://witech.se

Junn **JM-1**

PC

Styled after the legendary Linn Drum, JM-1 provides all of the classic sounds of the original, complete with a beautiful interface for controlling volume and planning. There is no onboard sequencer, with the plugin designed to act as a sound source only.

https://freevstplugins.net

SampleScience **Vintage Drum Elements**

Mac/PC

While not strictly free (it's $1) this plugin is designed as an emulation of the Yamaha RX-5, which was an excellent machine from the late 80s and early 90s. Apart from lots of drum kit elements, it also provides synthetic and ethnic kits, along with FM-style synthesis sounds, inspired by the DX synthesisers from that era.

www.samplescience.info

Max Project **T. Rex 606**

Mac/PC

This simple but incredibly effective plugin furnishes us with the seven classic sounds drawn from the very fashionable Roland TR-606. Just like the original, it's a basic affair but with the right treatment can be exceptionally effective, particularly when combined with sounds from other sources.

https://plugins4free.com

Native Instruments **Urban Beats**

Mac/PC

Featured as part of NI's Komplete Start Bundle, the Urban branding is firmly in line with hip-hop and R&B sounds, complete with an onboard sequencer and a rather useful effects section. Program patterns onboard or drive from your DAW.

www.native-instruments.com

Synsonic **BD-909/808**

Mac/PC

This pair of highly-effective drum synthesisers concentrate specifically on kick drums from the 808 and 909 drum machines. These plugins considerably enhance the control and facilities available on the original machines, with the ability to modulate pitch and add distortion. They will have your floorboards shaking in a matter of seconds.

https://synsonic-instruments.com

Planet Rock – Roland TR-808

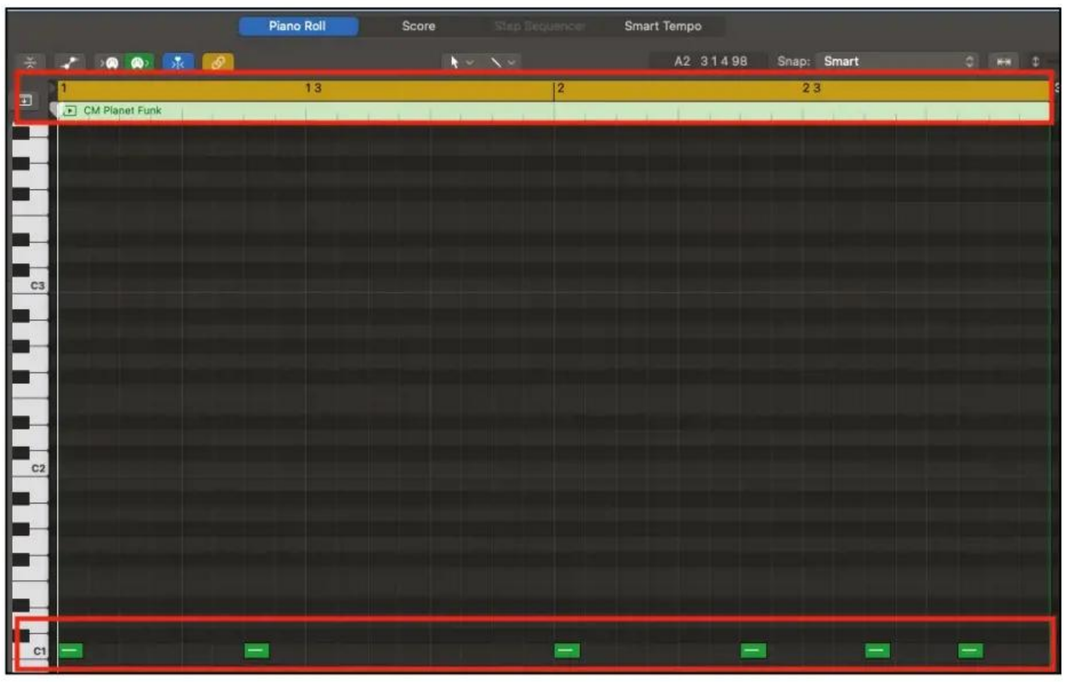
One of the all-time classic TR-808 patterns, stemming back to the early hip-hop era, Soulsonic Force, with Africa Bambaataa, made the *Planet Rock* sound with an 808 and a drum groove borrowed from Kraftwerk

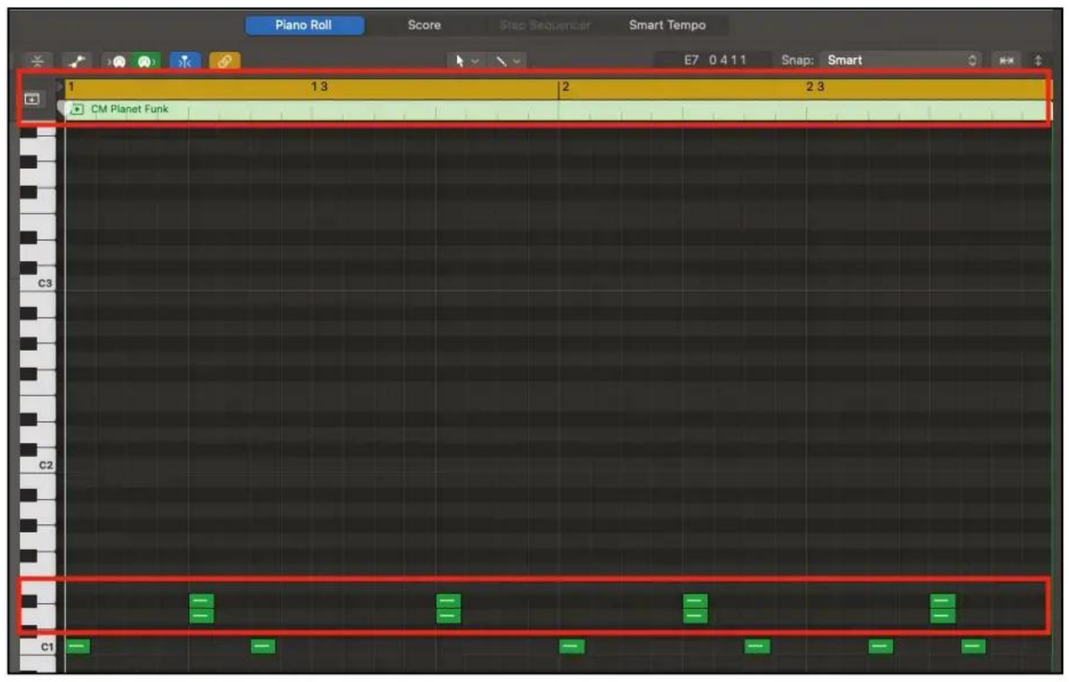
> Step by step

2. Create a classic *Planet Rock* TR-808 pattern

1 > We'll be using Roland's superb plugin version of the TR-808, but you can use similar 808-style sounds available in Logic. This pattern is based around two bars of music that repeat, so for ease we'll write the pattern in the step editor of our DAW.

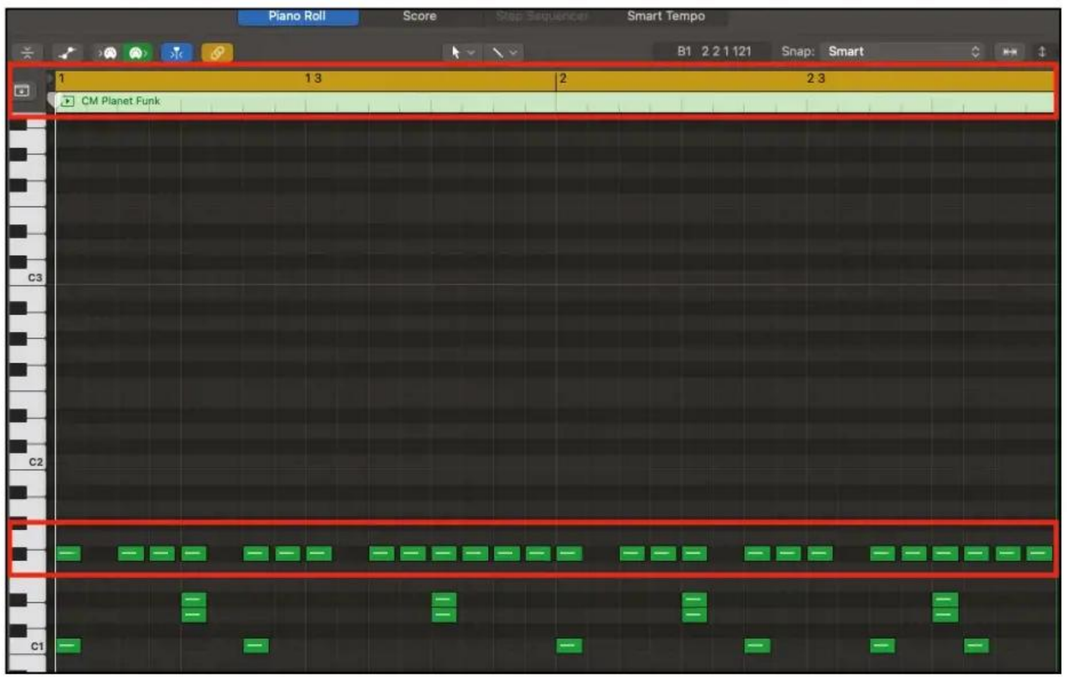
2 > Create a two-bar cycle or loop in Logic Pro and set your DAW's tempo to 126bpm. If you're using the Roland 808 plugin, or another similar plugin with its own sequencer engine, be sure to deactivate the playback sync option. On the Roland plugin, you'll find this described as Position Lock to DAW within the Option menu.





3 > Let's enter the pattern for the bass drum or kick. Locate the C1 note or line on your step editor and enter the notes shown. One trait of this rhythm is the trigger on beat 1 of each bar, and offbeat on the half of beat 2, with a similar turnaround at the end of the two bars.

4 > Now we can turn our attention to the snare pattern, which is far simpler. This snare is located on note D1, and plays only on beats 2 and 4, of both bars. It is also accompanied by a clap, so enter the clap sound on the same beats. You will find the clap located on note D#1.



5 > Now the hi-hat; this pattern only uses a closed hi-hat sound, which is located on note F#1. Enter the pattern as displayed, although it is worth mentioning that it's only a one-bar pattern, so once you have sequenced the first bar, you can copy it to the second bar.

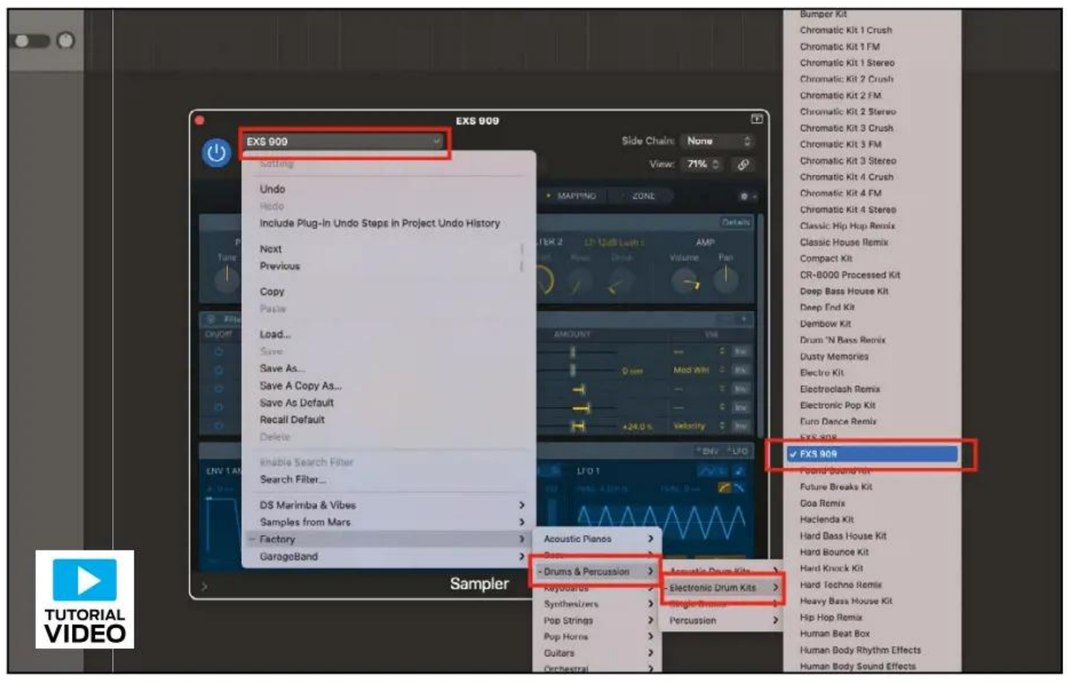
6 > Finally the cowbell, located on D#2. This is also only a one-bar pattern, so enter the first bar as shown, and copy the notes to the second. Open the 808 plugin, and transpose up the cowbell sound by two semitones, which will match the pitch of the original track.

Chime – DAW 909 sampler

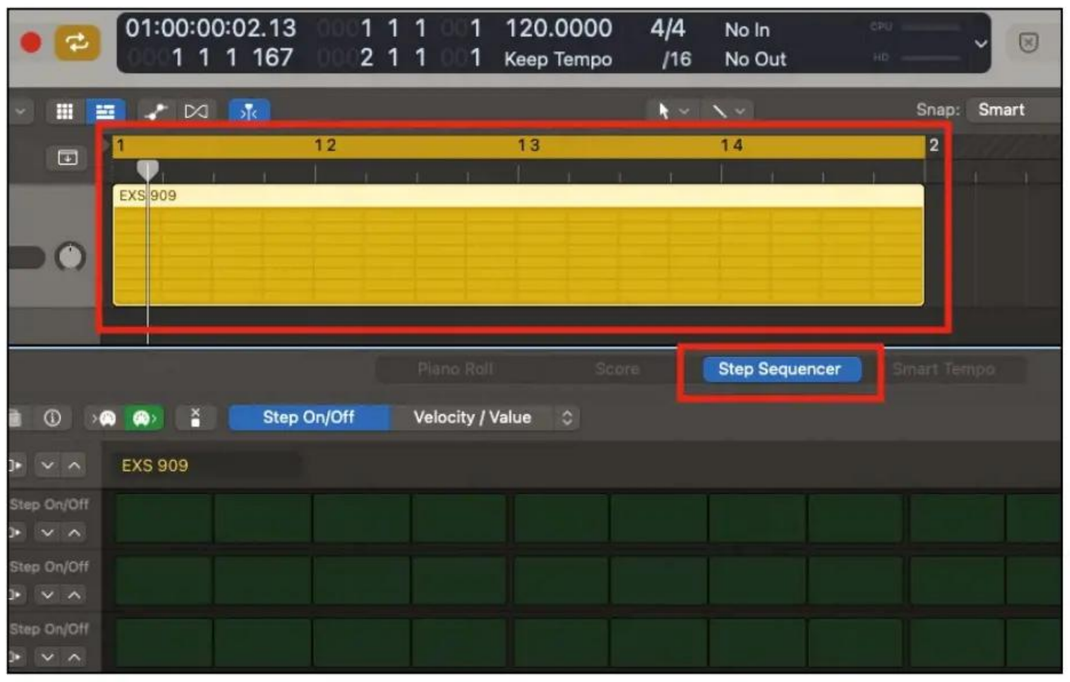
Back in the late 80s, the rave scene was just getting going. Orbital moved from bedroom producers to dance culture using their Roland TR-909. Most DAWs are equipped with a 909 sound set, so let's *Chime*

> Step by step

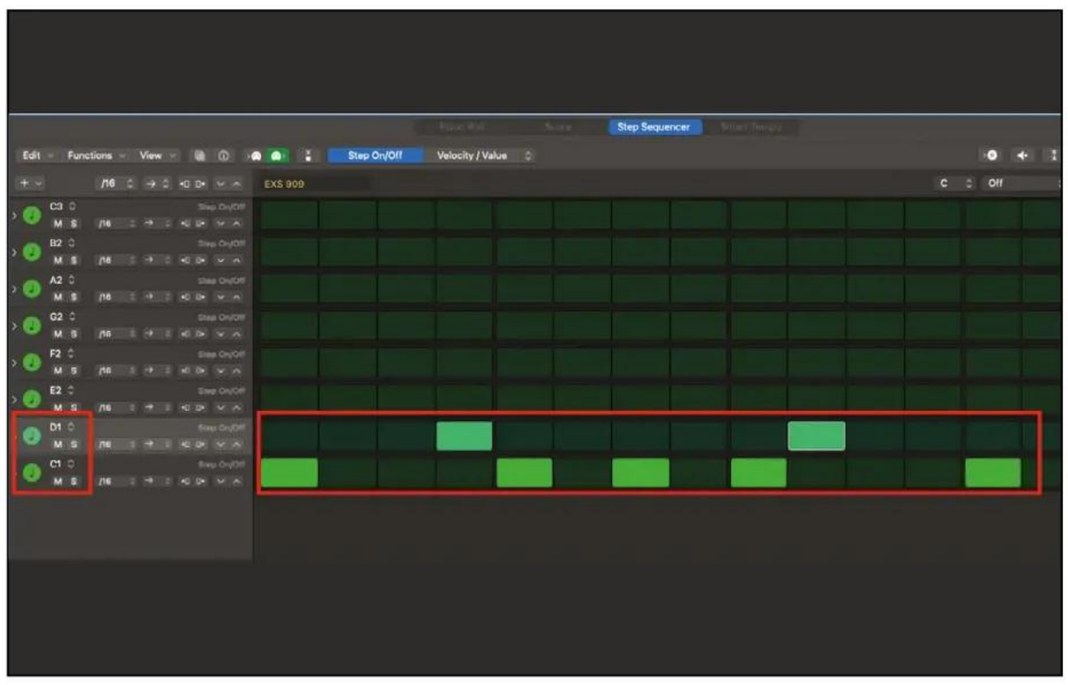
3. Use your DAW for an Orbital-inspired 909 pattern



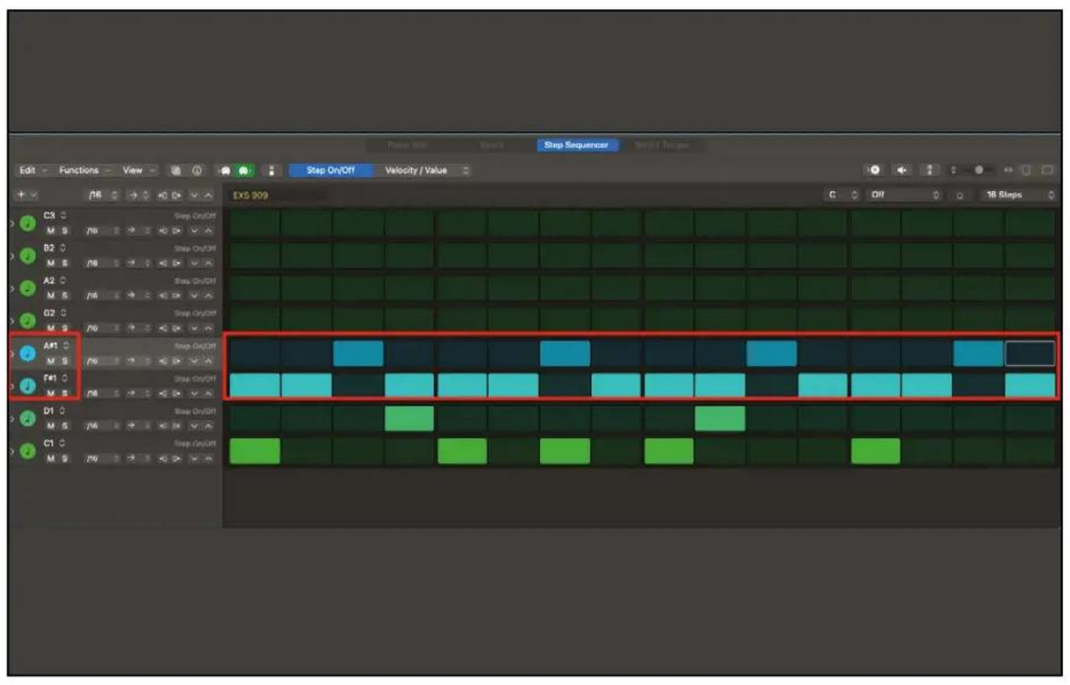
1 > Start by loading up an appropriate set of 909 sounds. In Logic Pro we are using the sound set called EXS909, from the default Logic sample library.



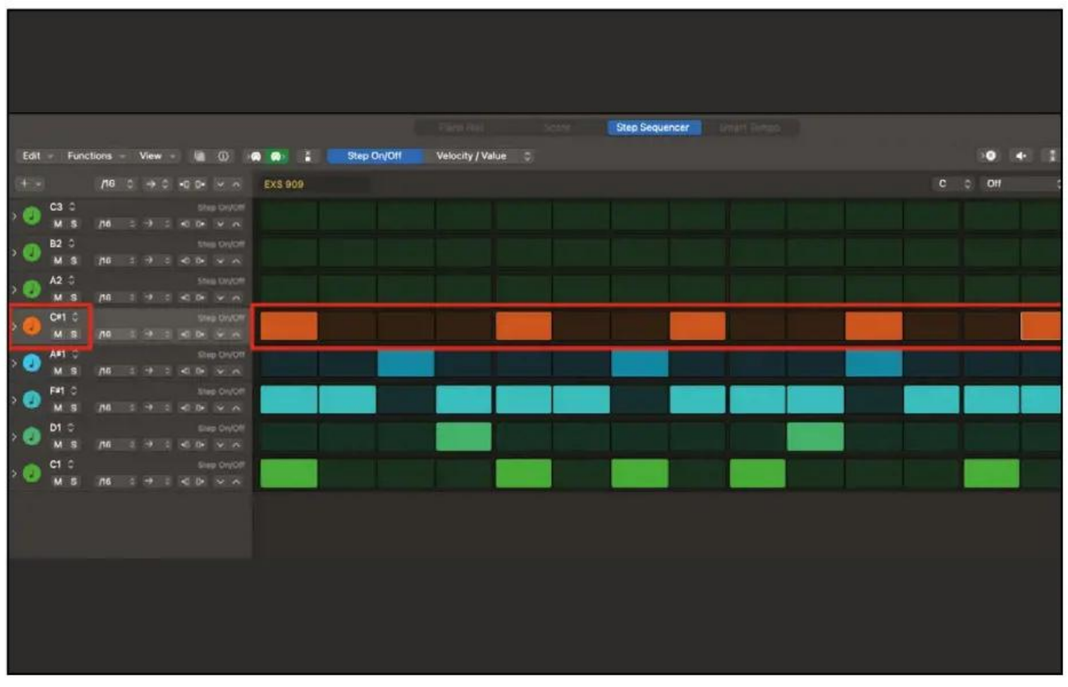
2 > The pattern we'll create uses only one bar, so set up a one-bar loop/cycle in your DAW. We'll work with the step sequencer edit page within Logic Pro, but you can use any grid editor you like. Watch out for the correct note names, which will correspond to the drum sounds. Set your Tempo to a classic 120bpm.



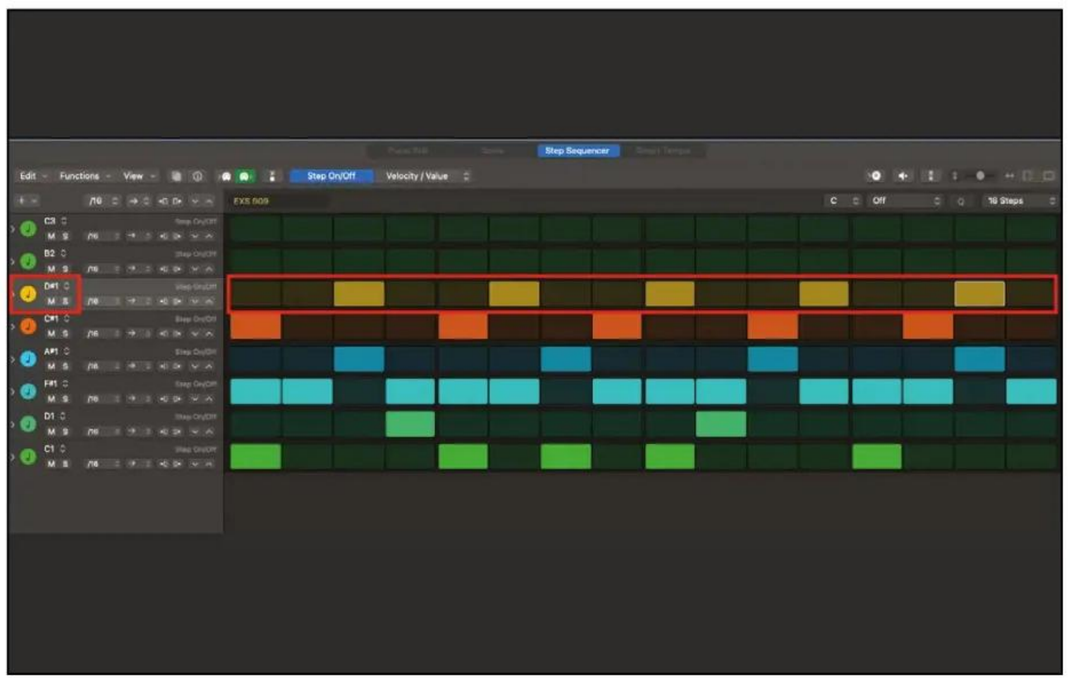
3 > Working with notes C1 for the 909 Kick and D1 for the snare, enter the note triggers as shown on our grid. Notice that the kick is relatively uniform, working against the snare drum which is subtly displaced.



4 > Our hi-hat pattern is going to use a combination of both closed hi-hats, located on note F#1, and open hi-hats which can be found on A#1. Notice that the open hi-hat does not play at the same time as the closed hi-hat. Enter the notes as displayed.



5 > Next, we'll enter the Rim Shot on note C#1. This pattern plays on the first beat of the bar, but then adds a slight Latin feel, which catches up with itself, by the time we come around to the first beat again. You can see these notes in orange on our edited display.



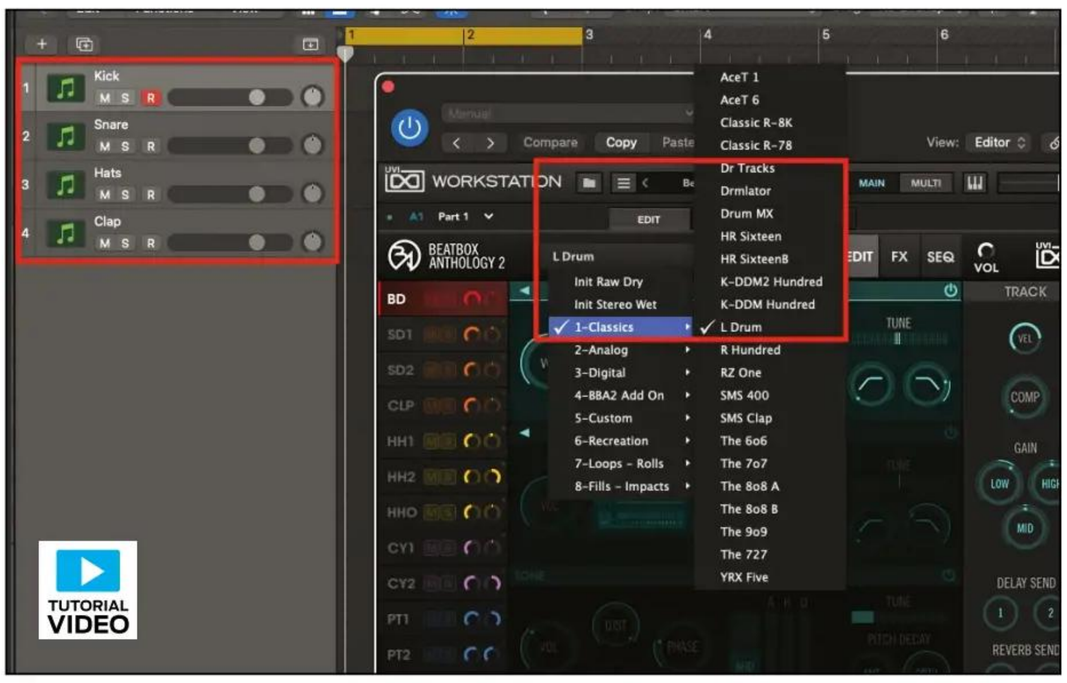
6 > Finally the Claps, which can be found on note D#1. This provides an interesting polyrhythmic element, against the hi-hat and bass drum. In other patterns, it would be more common to find the claps playing with the snare. Enter the notes as displayed on our editor.

Blinding Lights – UVI Linn

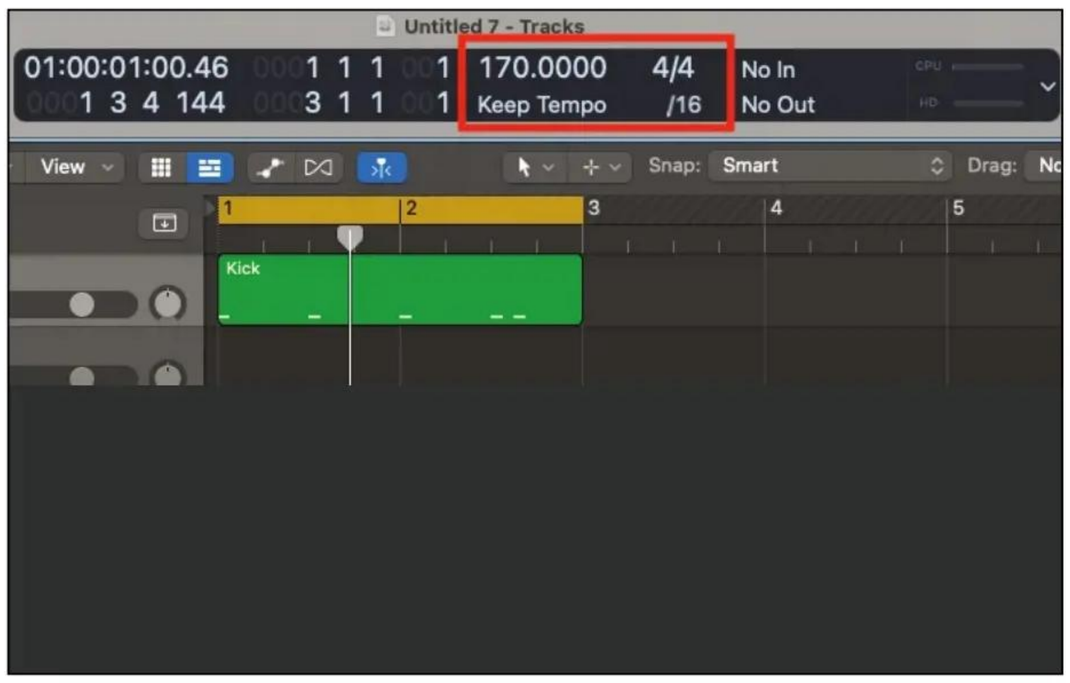
With his 80s take on contemporary pop culture, The Weeknd's hit *Blinding Lights* uses a basic but highly effective LinnDrum pattern

> Step by step

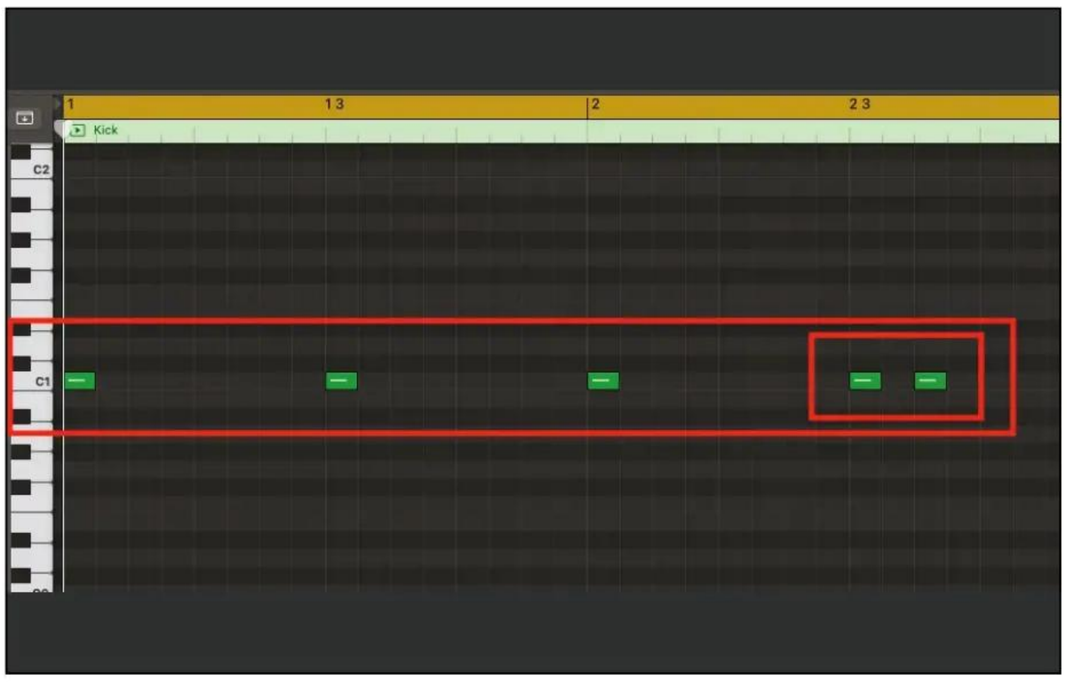
4. Channel The Weeknd with a LinnDrum pattern



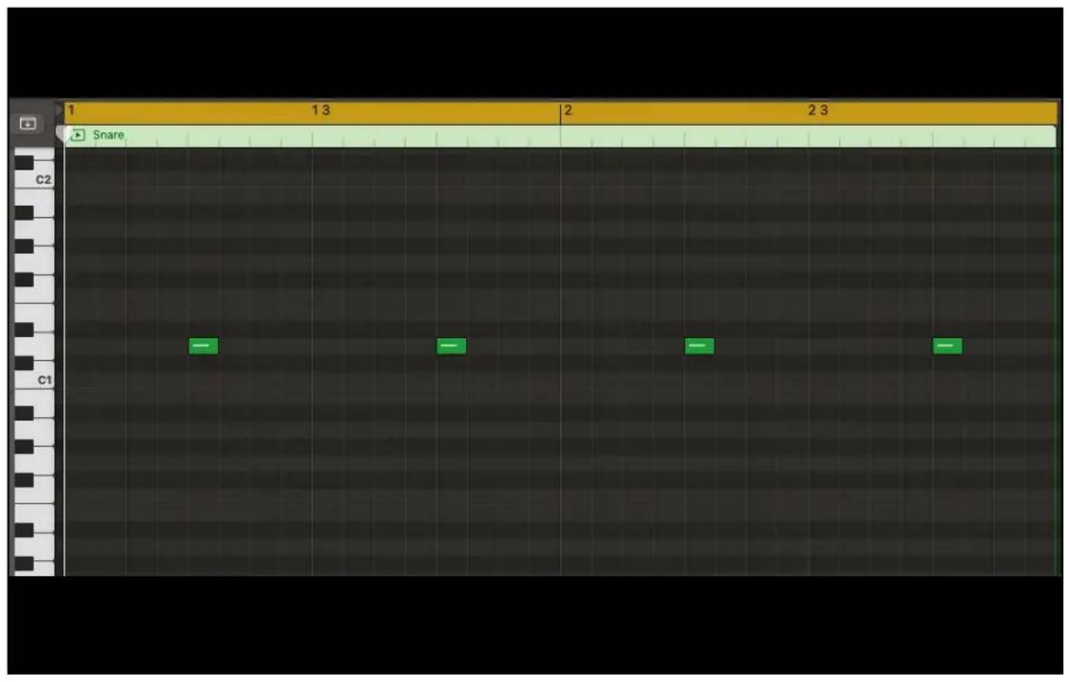
1 > Begin by setting up Logic with four tracks, for kick, snare, hi-hat and claps. Ideally, use LinnDrum samples, either from the library or a third-party source. We are using the UVI BeatBox Anthology 2, and have selected the L Drum set from the default library.



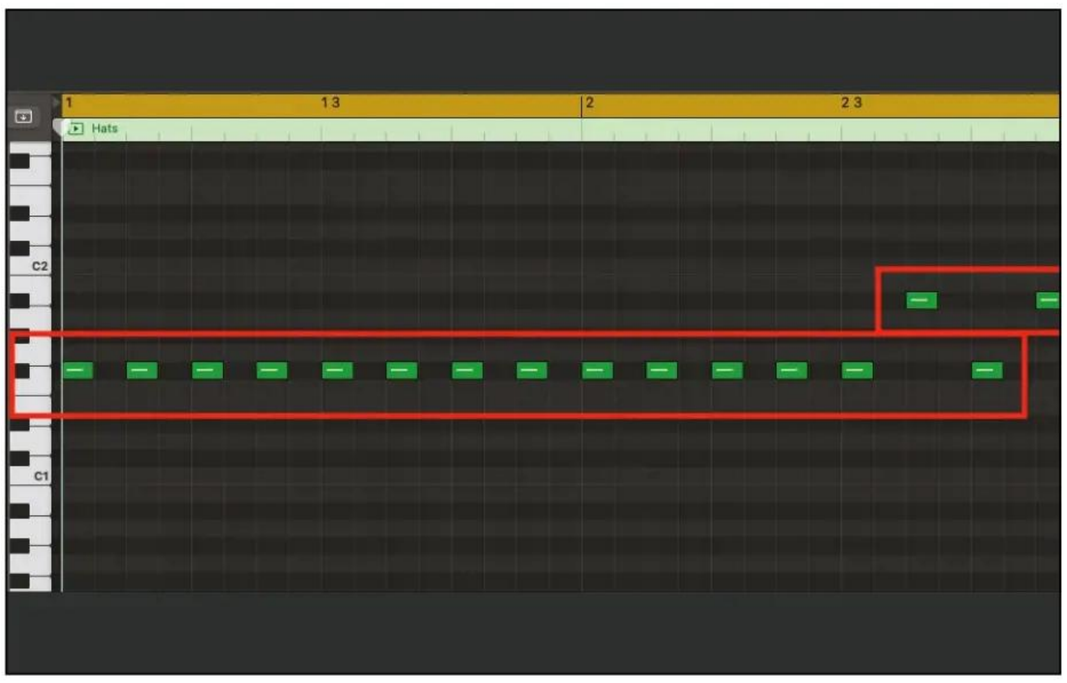
2 > The tempo for this track is pretty quick and driving, so move your metronome/tempo to a speed of 170bpm. If you are using a drum plugin to act as your sound source, be sure to switch off any Sync element within the plugin.



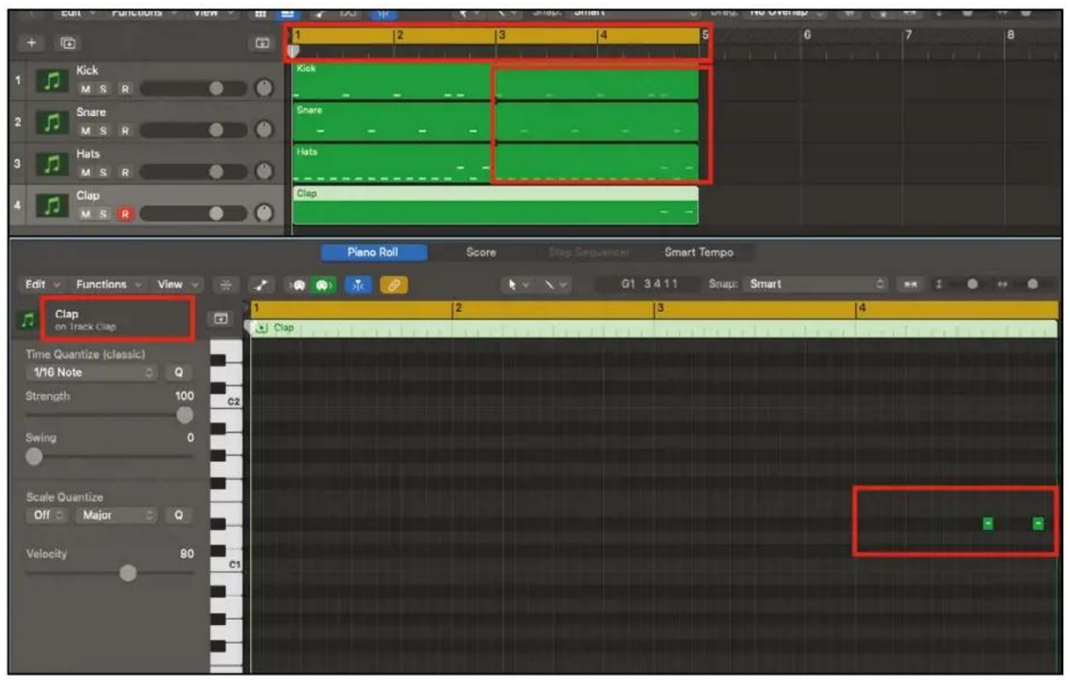
3 > Beginning with the kick track, we'll work in a two-bar loop or cycle. Enter notes on the first and third beat of both bars. There is an additional note strike, on the 1/8th note, after the last of the notes in the sequence. You may need to subtly tune your kick down.



4 > The snare pattern is about as easy as a snare can be. Simply place a snare on beats 2 and 4 of both bars. The original track's snare does sound quite bright, so do EQ the snare to suit your own use and mix.



5 > The hi-hat pattern is also very simple, placing notes on every 1/8th note of both bars. Notice that there is a lack of any accent or emphasis, however we have placed two open hats, at the tail end of the two-bar sequence, purely to add a little interest, away from the original closed hat pattern.



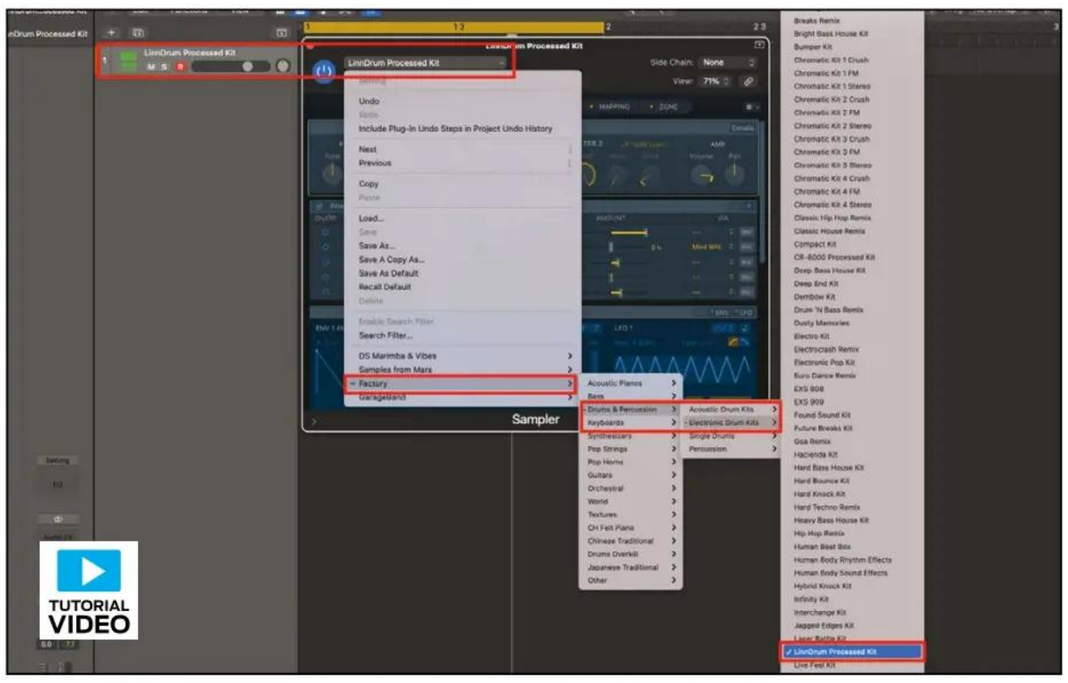
6 > Finally, there is a clap element to this pattern, that occurs at the end of every four bars. Place the existing three tracks on a loop/cycle, and then add claps on the offbeat 1/8th notes, as shown. These will fall with the open hi-hat from the last step. To make it sound more like the original, add a generous reverb to the clap signal only.

Running Up That Hill – Logic Sampler (Linn)

One of the most iconic LinnDrum patterns emanates from the recently rebooted Kate Bush track, *Running Up That Hill*. We give the Linn toms a run for their money, using factory sounds from our DAW

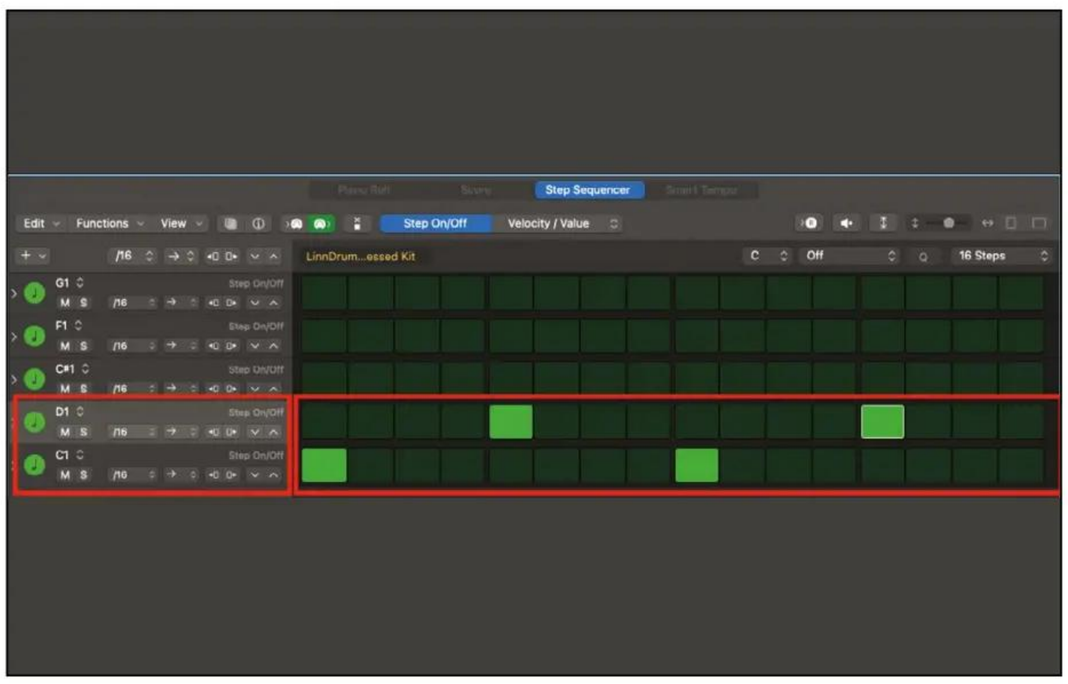
> Step by step

5. Get the iconic Kate Bush sound

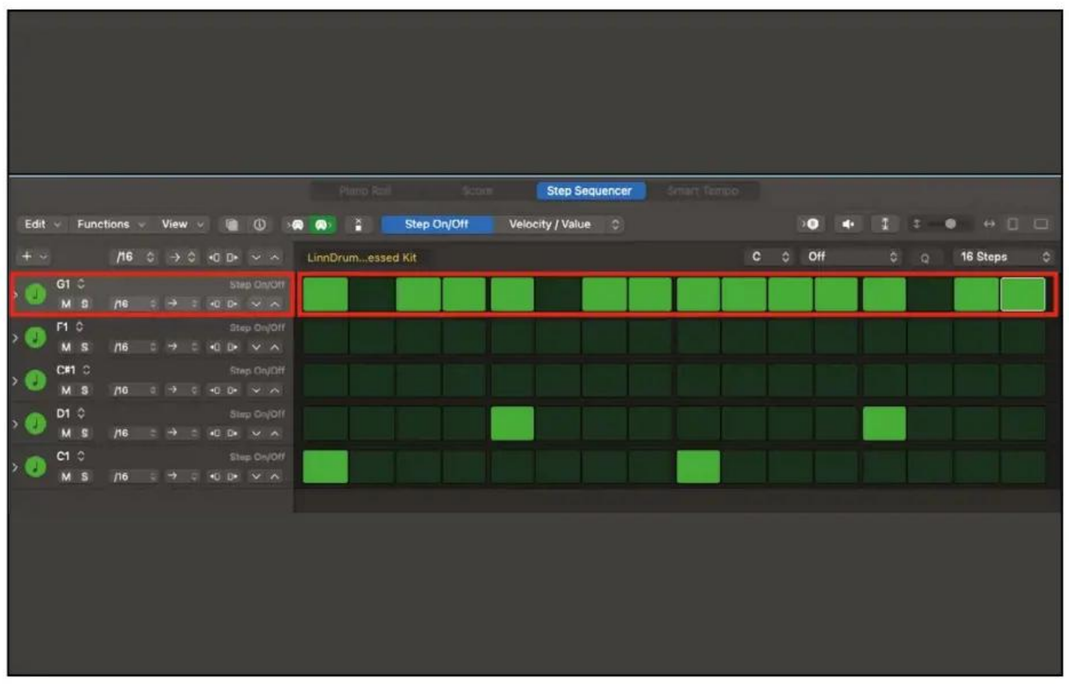


1 > It's possible get great LinnDrum effects using just sounds from your DAW. We'll use the factory samples from Logic Pro. Create a new track, load the Logic based Sampler and locate the LinnDrumProcessed Kit from the included presets. We're running at a tempo of 108bpm to match the original.

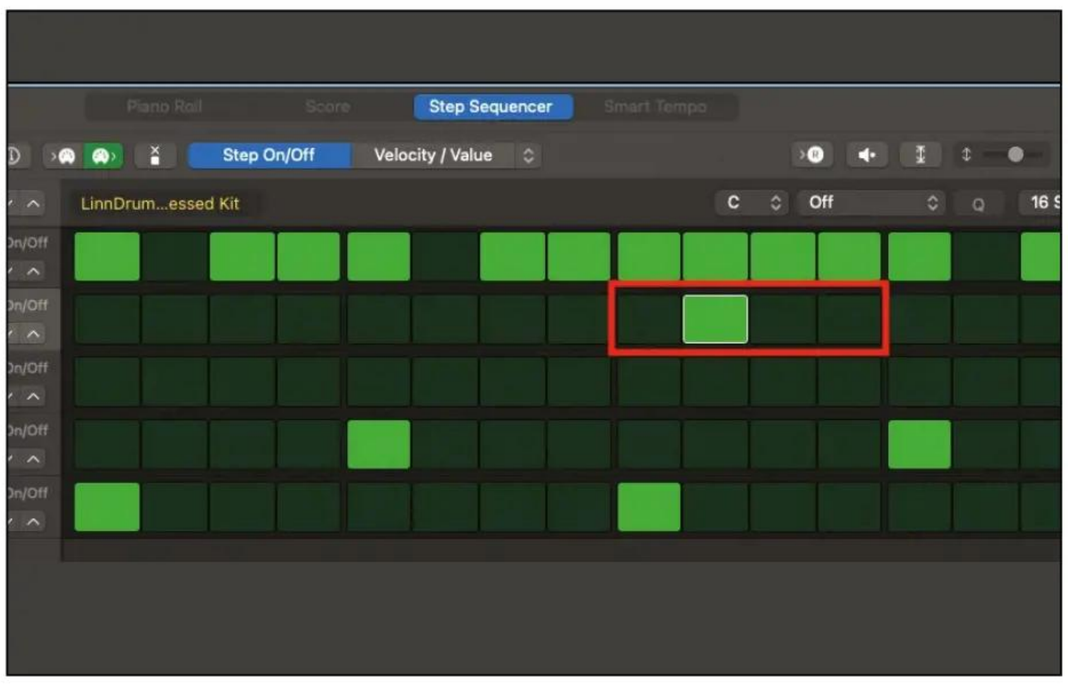
2 > The toms within this kit are a little on the high side in terms of pitch, but we can detune them. Locate the toms within your sampler's editor, and detune the mid and low toms down by a few semitones each. The actual amount will vary according to taste and track.



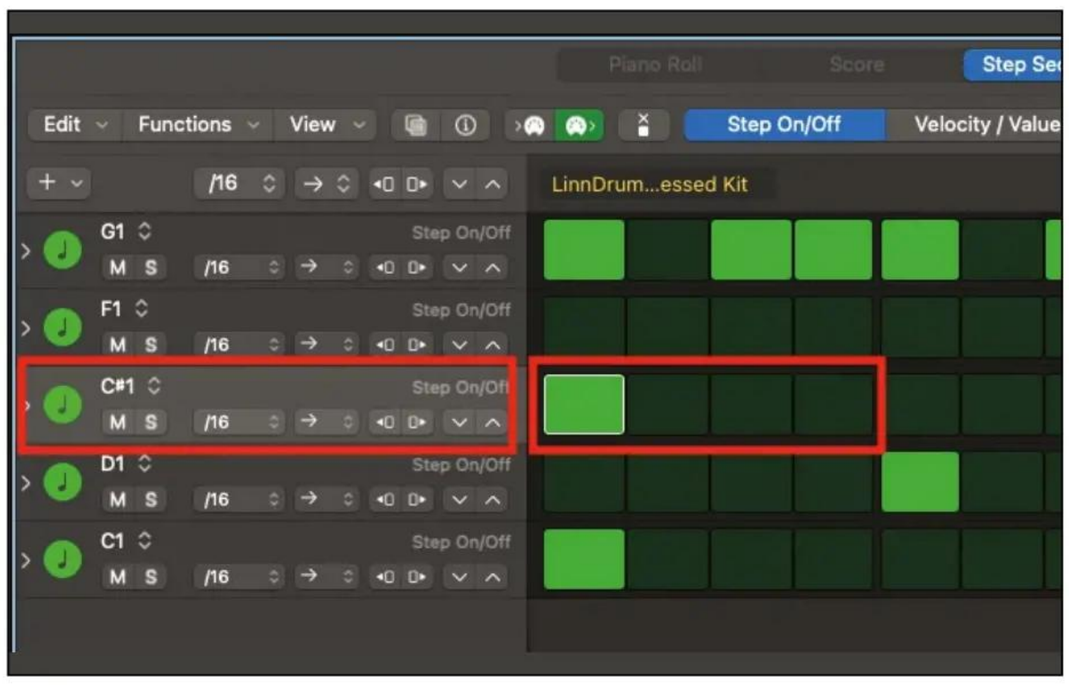
3 > You can use any method you wish to enter the notes, but we'll start by using the Step Sequence Editor from Logic Pro. Activate your editor for one bar; input the kick drum (C1) on beats 1 & 3, and the Snare (D1) on beats 2 & 4.



4 > The main pulse for this drum track is created via the detuned mid tom, which takes the place of a more usual hi-hat rhythm. On our drum map, this is note G1. Enter the pattern as displayed.



5 > There is a single low tom hit, which adds an accentuated offbeat every bar. The low tom is located at pitch F1 on our drum map, playing a single hit on the second 1/16th note of every third beat.



6 > Finally, there is a single rim shot (C#1) at the beginning of every bar, on the very first beat. You may need to adjust the volume of each drum to suit your track. For that final 80s flourish, add a hint of gated reverb, particularly to the snare.

Kick and snare sounds with ZebraCM sampler

Using sounds from drum machine or beatbox libraries is a great way to get a drum track together quickly. However, creating your own drum sounds is the next creative step and can give your music an edge

> Step by step

6. Use our ZebraCM synth plugin to create your own drum sounds

1 > Begin by loading Logic, and then load our ZebraCM plugin onto an instrument channel. We'll start by creating a kick drum sound, but to ensure we start from a default, select Init from the dropdown menu, located via the Display at the top.

2 > This sound will be relatively loud, so we recommend reducing the master pot to the value of 50. We won't need OSC1 for this sound, so reduce the volume of OSC1 to 0, but increase the level of White Noise to a value of 100.

3 > Move over to the filter section, which is located on the top right-hand side of the plugin. Click on the filter type display, to select the filter called LP Allround. The LP stands for low-pass filter. Next, alter the value of the Cutoff pot to 30.

4 > Remaining within the filter section, turn up the Resonance pot to its fullest level of 100, and using the pot which is immediately below, and labelled Env2, increase the pot's value to 48. This will generate a sine wave which we will quickly sweep when we play a note.

5 > ENV2 is assigned to control the filter cutoff, but we need to make some alterations to the envelope phase values. Set the Attack pot to 0, the Decay pot to 30, Sustain pot to 0 and Release pot to 25.

6 > ENV1 Controls the volume of our kick and we need to make some similar alterations. Set the Attack to 0, Decay to 38, Sustain to 80 and Release to 25. Tweak to all of these to make the sound work for your track. The decay and release make the biggest differences.

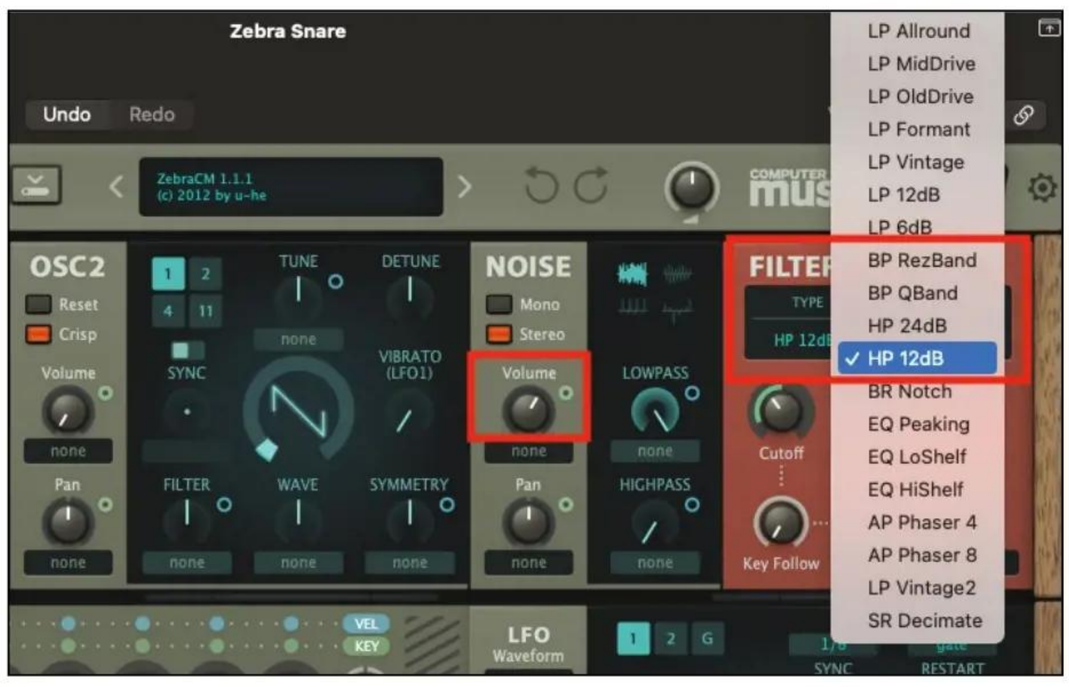
7 > Next, we need to create a second instrument channel, and load a second incarnation of our ZebraCM plugin. Now we'll make a snare sound, using a similar process, but with a slightly different approach. Once again, reduce the master level to a value of 50.

8 > To create our snare sound, we are going to use a triangle wave via OSC1. Leaving the volume of the oscillator set to 100, change the Waveform to reflect a value of 3.00. This element will be the tuned pitch of our snare drum.

9 > Move over to the right of the plugin window, and increase the volume of the Noise to a value of 120. We also need to change our filter type, to the filter called HP 12dB. This is a high-pass filter, and ideal for creating a brighter snare sound.

10 > Remaining within the filter section, set the Cutoff pot to a value of 57, and the user assigned ENV2 pot, to a value of -118. Note that this is a negative value, which requires a movement of the pot to the left.

11 > Next we need to shape the volume contour of our snare, using ENV1. Set the Attack pot to 0, the Decay pot to 35, Sustain pot to 0 and Release pot to 30.



12 > Finally, we need to make similar changes to ENV2, controlling the filter cutoff. Set the Attack pot to 0, Decay to 22, Sustain to 0 and Release to 20. Altering the decay and release phases of both envelopes can shorten and elongate the sound, so adjust to suit your track. **cm**

6 of the best... **Software effects**

Need some third-party plugin effects for Logic? We have some of the best rounded up here – these plugins all scored well in our recent reviews...

Minimal Audio **Morph EQ**

$49 10/10 cm314

Morph EQ can be used for morphing effects, as well as more typical EQ duties. It aces both processes, making it one of the most creative plugins we've used. "Morph EQ takes your regular EQ interface and injects it with some real time manipulation for awesome filtering effects."

www.minimal.audio.com

Caelum Audio **Flux Pro**

£50 10/10 cm311

There aren't many effects plugins out there that would deliver quite this much power for so little outlay. "Caelum are gradually building an impressive stable of plugins. Flux Pro is their most powerful to date and it's a fantastically creative offering."

www.caelumaudio.com

Arturia **eFX Fragments**

£80 10/10 cm309

Arturia, of course, are well known for their synths, but they can do the odd effect too, as this granular reshaper proves. We said: "eFX Fragments is among the most rewarding sonic manipulation toolkits that we've ever had the pleasure of testing."

www.arturia.com

Devious Machines **Infiltrator 2**

£99 9/10 cm315

infiltrator 2 is a highly creative multi-effects processor, and if you're after an all-in-one creative toolbox, we think it's well worth it. "Infiltrator 2 is exactly what you want for a brilliant plugin – the same, only better. Awesome stuff."

www.deviousmachines.com

PSP Audioware **PSP Saturator**

$99 10/10 cm306

PSP have completely overhauled a plugin that does everything from subtle enhancement to deep saturation. "A highly flexible, well equipped processor that delivers a vast array of tape and valve saturation effects."

www.pspaudioware.net

Cableguys **ShaperBox 3**

€99 9/10 cm317

ShaperBox 3 is an update to a multi-effects tool that is the most powerful plugin you can get for the cash, and really allows you to master your effects. "It lets you to apply loads of dynamics and achieve the outcomes you want, and with audio and external triggering it's now more powerful than ever."

www.cableguys.com

The 3-reverb approach

Choosing and adding reverbs can seem daunting, but this simple technique should get you up and running in no time at all

Artificial reverb is a major mixing topic, and more specific single reverb techniques can be quite complex. This time, however, the focus is on some basics and a very reliable mix technique that I use myself very regularly in Logic.

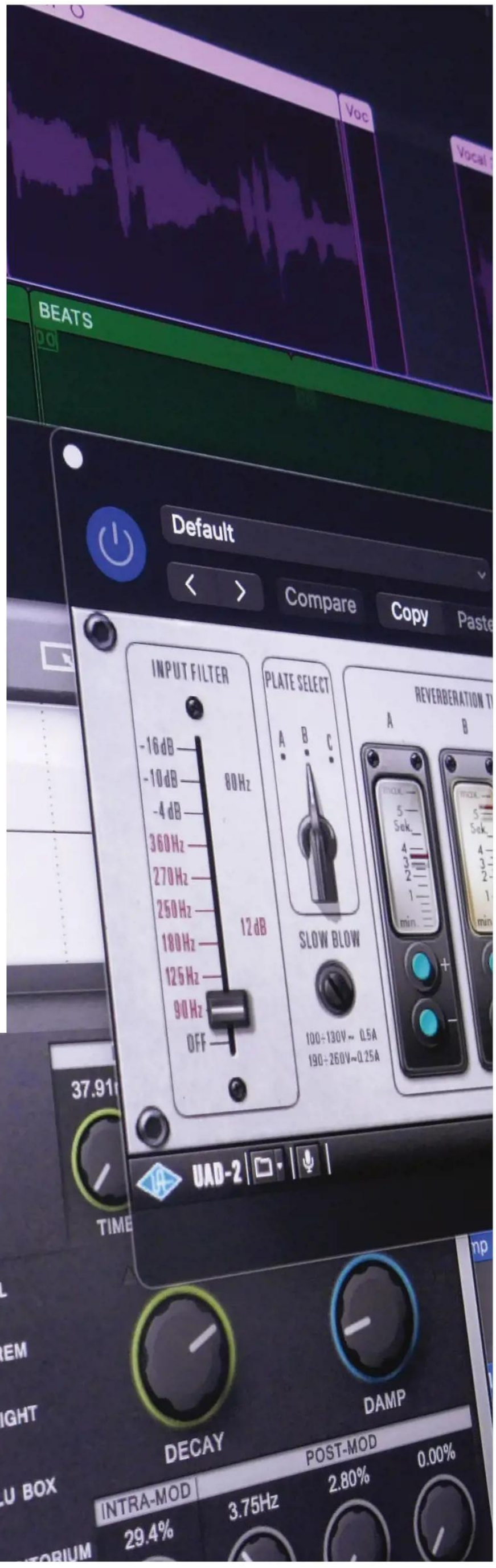
But first, it's important to appreciate that artificial reverb can be used in many ways including creating a common space for elements in a track, adding a specific spot effect, or even in combination with recorded ambiences – drum kits for example.

Next up, genre is important, so reference relevant material (see the pro tip). And remember, you don't have to use reverb at all, and sometimes delays will add the sense of space that you're after.

This technique is an overall approach where you set up three reverbs, which I'll loosely call small, medium and large, each on their own auxiliary. The decay of the reverbs is not set in stone, but in general terms, the small one is designed to help add tight ambience/width, the medium one is a regular, quite rich, room (and probably the reverb you'd initially reach for) and the large one is designed to add a long and coloured space.

Within that framework, look for reverbs that suit your track, combine reverbs if it works and expect to adjust your send levels throughout your mix. And remember, this is an approach and not restrictive, so use what you need and add more reverbs if required.

That's the idea. Let's put it into practice.



> Step by step Working with three reverbs

1 > Let's try the technique in a couple of contexts. The first is a regular, multi-tracked drum kit and the second is a contemporary track with beats, bass, various synths and some vocals. In both cases, the raw sounds are pretty dry and need some reverb to help the elements gel and deliver a more polished sound.

2 > To get started, set up three auxiliaries and then on the return channels add three reverbs. You can use the same reverb plugin for all three if you like, but I'm personally a big fan of adding variety and here we've loaded a convolution reverb, an algorithmic reverb and a plate reverb.

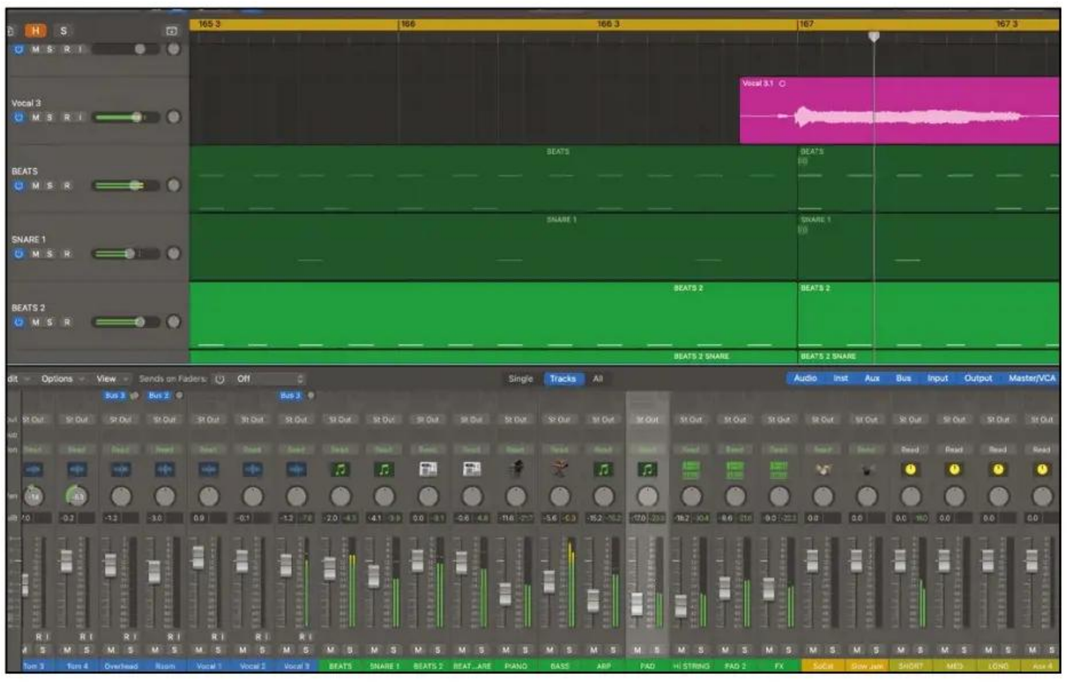
3 > In terms of decay times, the short one is 0.7 secs, the medium one is about 1.2 secs and the long just over 5 secs, but as mentioned, these are not strict rules, and often finding reverbs where the colour fits your mix is just as important. So, once you get started, if a reverb doesn't fit, try a different preset.

4 > Even if you don't use them that much, acoustic drums are perfect for trying out reverbs and besides, the techniques are universal. Our kit has a room reverb recorded with the drums and we've balanced this conservatively. To add width and depth to the snare, apply some of the short reverb so it's just audible. Mute the send to A/B the difference.

5 > If the snare needs to be bigger, and this will probably depend on the genre, add in some of the medium reverb, but also leave the short reverb active. Remember, each reverb is doing a different job. Here we've also added the medium reverb to the tom fills. Try muting the returns to A/B the difference.

6 > Finally, there can be times when we want the drums to be really big. Rather than head back to the snare and toms, we can leave those as they are and use the long reverb either on the overheads or room blend. Here we've gone for the overheads, and once again using just enough and A/Bing to check.

> Step by step Working with three reverbs *(continued)*



7 > The great thing about this technique is it works pretty well across multiple sources. Moving onto our track, most of the sounds are pretty dry, including the synths where we've removed most of the onboard effects. We have two snares. Let's start with those.

8 > One snare is crunchy and the other dry and tight. We've tried both and the tight snare works best. Again, using just a moderate amount of the small reverb adds depth to the back beat but keeps it tight. But the sound isn't quite right, so we've swapped out the preset for a similar but slightly longer (0.8secs) preset.

9 > Next we're going to jump to the high string part. We want this to have an ethereal feel and distance, so we're heading straight for the large reverb. The part is balanced quite low in the mix so to create a washy effect the send level can be high.

10 > We have a thick pad sound (Pad 2). This needs more width but we don't want it to be too distant. The medium reverb works well here, adding richness to the sound, and we've added a small amount of the large reverb as well to give it a bit more scale.

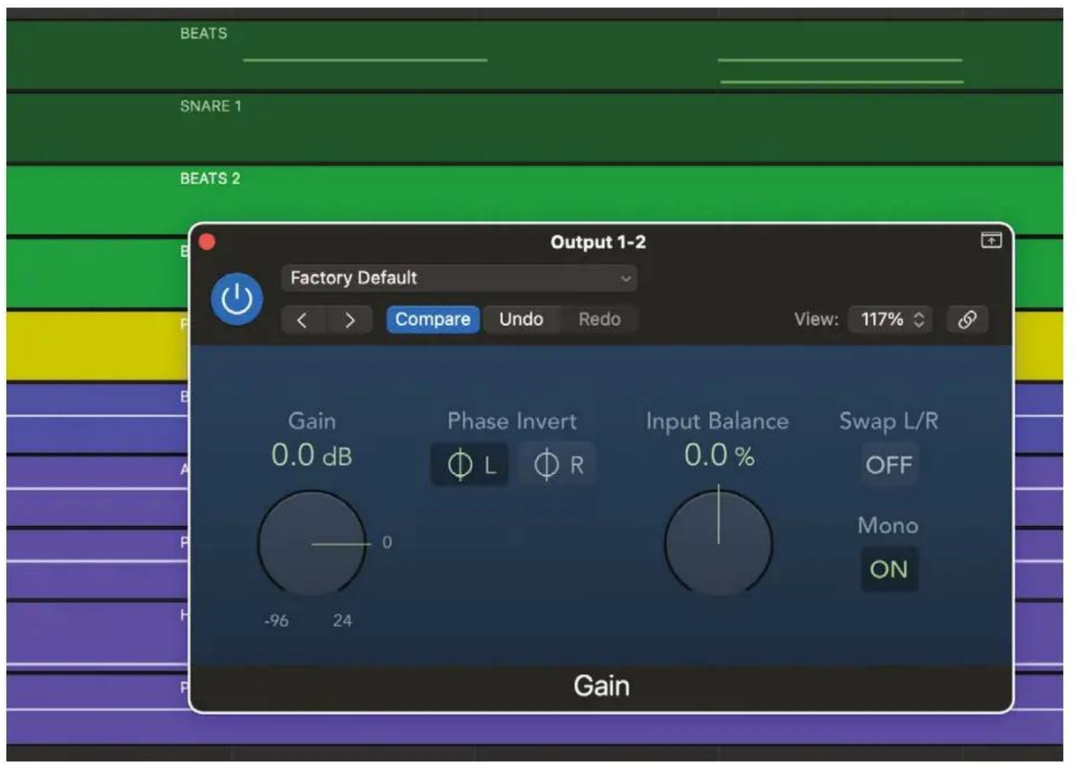
11 > Moving on to the vocals, sometimes we need a specific vocal reverb, so bear this in mind. However, most of the time I can get what I want using a combination of the three core reverbs. Here we're adding just a little of the small reverb for width and some of the medium reverb for depth and richness.

12 > The long reverb is too coloured for the main vocal section, but works really well for the vocal snippets that follow. Here we're using DAW automation to send to the large reverb just for this section. Remember to A/B, muting either sends or returns. And finally, expect to tweak your send levels throughout the mix process.

PRO TIP

REFERENCING

Tip 1: Referencing good examples of finished tracks, particularly in the genres you're mixing, is vital for improving your mixes. For reverbs, listen out for how long the reverbs are and how much has been used. Try listening to just the difference signal. Add the reference track to your DAW, invert the polarity of the left or right channel and listen in mono. The difference signal will contain lots of sounds including some that are panned, but you should be able to gauge the size and level of the reverbs used.



Tip 2: Balancing reverbs on headphones is notoriously hard, particularly without any kind of headphone monitoring assistance plugin or system. It's tricky not only choosing the right reverb but particularly getting the levels right. Still, headphone mixing is a reality for many of us so we need a workaround. My tip is to periodically listen on speakers. They don't have to be amazing, but the perspective provided can save you a lot of tail chasing.

Dua Lipa's *New Rules* demonstrates a selection of reverb types at once

Mauricio Santana/Getty Images

RECOMMENDED LISTENING

DUA LIPA
NEW RULES
A good example of selective and combined use of different reverb lengths in contemporary production.
bit.ly/DL_NewRules

GEORGE MICHAEL
A DIFFERENT CORNER
When choosing reverbs, sometimes you just have to use your instincts as this particularly sibilant example demonstrates.
bit.ly/GM_diffcorner

SECRETS OF SOUNDTRACKS

Making music for picture is now one of the most rewarding roads that a music-maker can travel. So, sit back as we arm you with the knowledge and tools to start your own soundtracking journey...

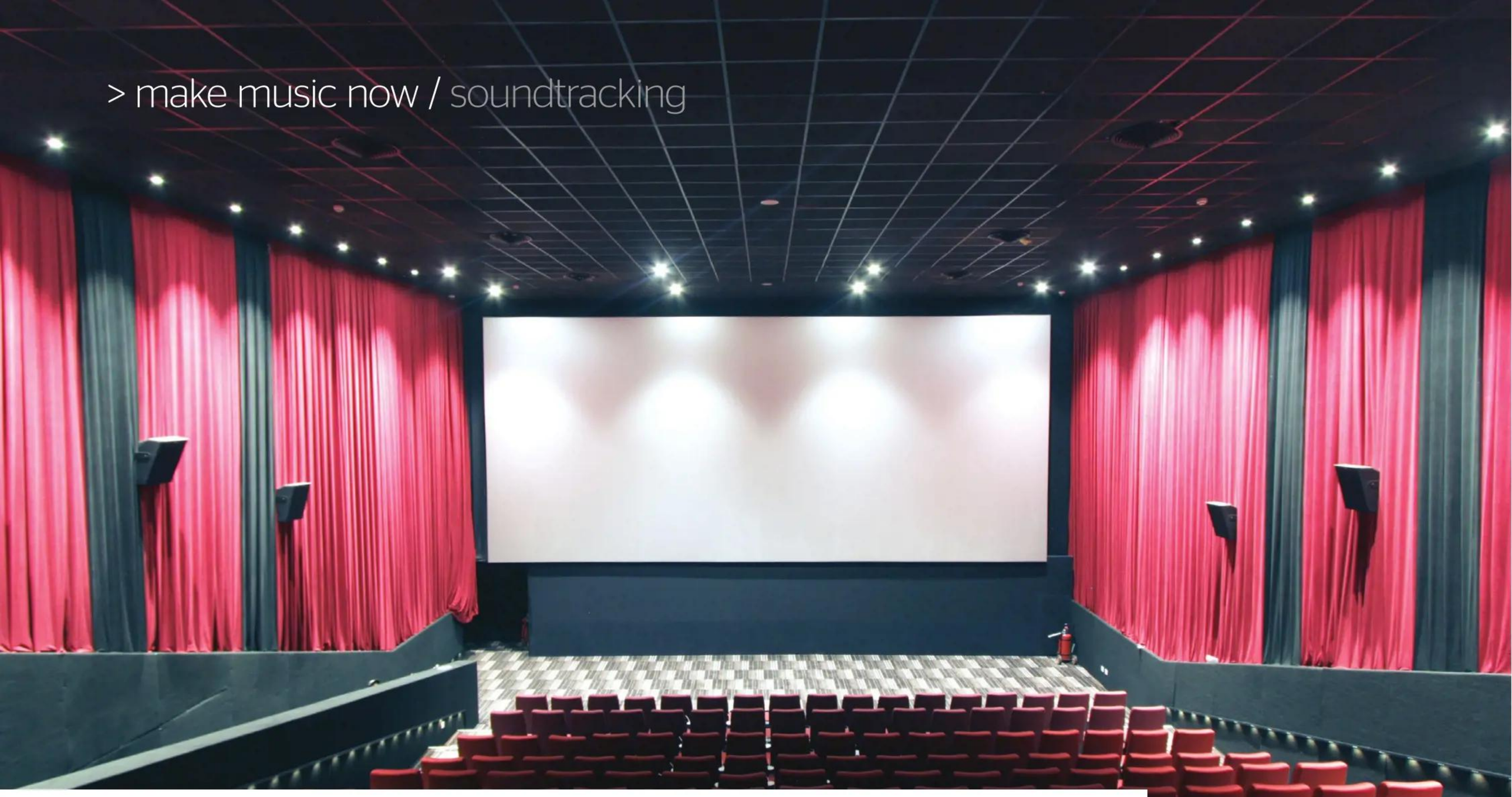
> There are a lot of issues for musicians to worry about in 2023. Whether it's anguish about the algorithmic nature of our listening habits, or those who point at the financial unsustainability of music streaming for the economic survival of artists. With all this pervading negativity, some might even be thinking of stepping away from their core passion. But, a more positive, somewhat under-shared truth is that in the modern world, music has really never been more omnipresent.

The boom in streaming television over the last ten years has been inextricably bound to the services of a growing list of distinctive composers and sound designers. Expressive composers are personally hired to infuse their own creative sensibilities into our favourite shows, films and video games.

Merely a decade or so ago, the art of writing to picture was significantly different (and significantly *harder*) than the process is now. Thanks to the rise of video-supporting DAWs and upgrades, the plethora of big budget orchestral and real instrument sample libraries, not to mention the numerous mountains of sound design-tailored effects, most of us are over-armed to begin our soundtracking journey. The sad thing is, many of us probably don't even realise it.

While conventional writing to picture is still a prerequisite for a lot of projects, there's also been a simultaneous growth in production music and an explosion in the number of sync agencies, who work tirelessly to get their artists placed. Resultantly, many thousands of musicians now make a comfortable income writing cues to more general briefs, and pitch their archives of tracks, alongside said agencies, to music supervisors on a regular basis.

Across the next few pages, we'll explore every facet of modern soundtracking, from the art of writing in tandem with picture, to the more practical must-buy lists for those who are operating in specific fields. We'll also consider the recent changes in the wider soundtracking industry, and speak to several seasoned composers. Finally, we'll look ahead and anticipate the future...

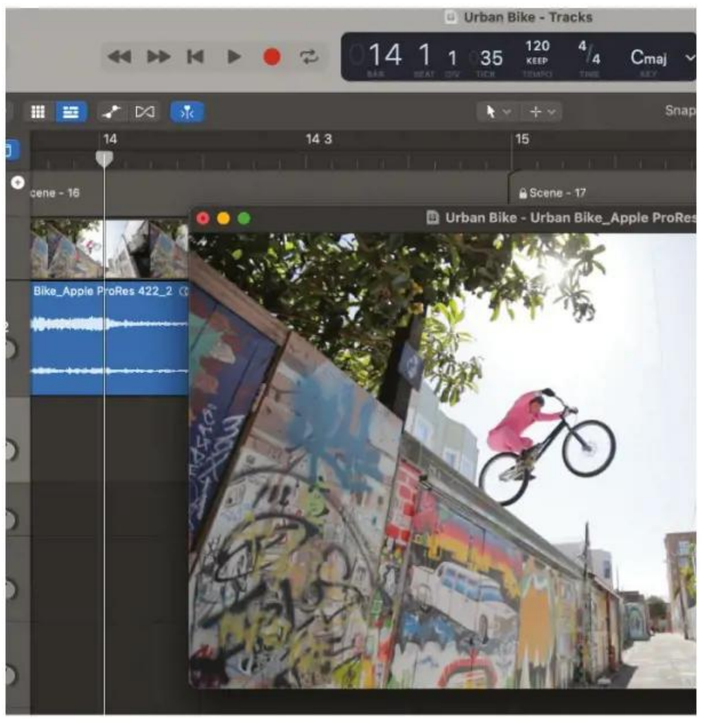


Writing to picture

Shifting to ‘writing to picture’ mode requires you to respond musically in conjunction with the visual events on-screen. In this first section, we’ll explore some of the best practices that will serve you well during this process

In the hyper-fast world of film, television and video game development, composers rarely have the chance to live with a project for long periods of time. More often than not, soundtracks are recorded during the final stages of production, and composers are enlisted to turn around their cues within the tightest deadline. A more music-centric project might involve a composer from the very early stages, allowing them to gradually develop themes and musical ideas that grow over time. While that approach would be attractive for many, it’s not unwise for jobbing composers to already have banks of mood-aligned themes, melodies and cues ready-to-go. We’re going to assume you’ve accepted a more conventional film soundtracking brief for this first section.

Every element of your approach – what instruments are used, what genre you’re writing in and even how your material sits in the wider sound mix – needs to feed off the emotional content of the film. For science fiction projects, electronic textures, synths and mechanical beats are likely going to be in play. For romantic films, you’ll likely find elements like sweeping strings, subtle piano and repeated ‘character’ themes. On the horror-end of the scale, just think of those sharp, unnerving stings, typified by Bernard Hermann and his violin-based orchestral tension. Also, consider how nuanced sound design plays its part in contributing to the sense of dread. Some of the best soundtracks often delight in upturning the norms. But the principle is that the mood board is *always* set by the project. A composer’s job is to work for the film, heightening the emotions, major themes and momentum.



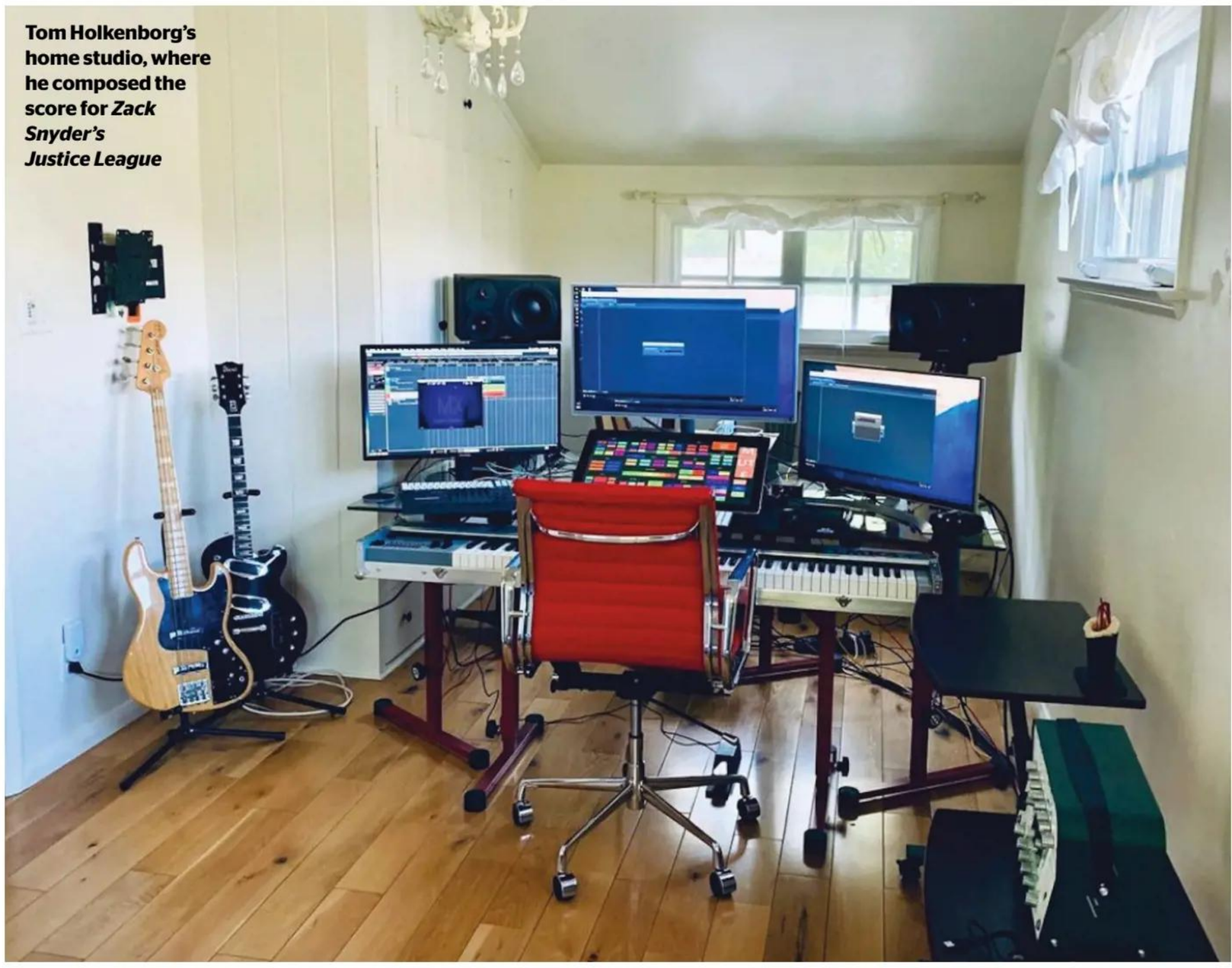
Many DAWs can be used for soundtrack composition but we will obviously focus on Logic for this feature!

Once a composer has been hired to take on a project, the first step is to attend what is known as a ‘spotting session’ where the current cut of the film or TV show is played. During this process, the relevant creatives (normally the director, writer and/or producer) will discuss with the composer how they are imagining the music at this stage – there may even be a temp score in place. For composer Oliver Patrice Weder, head of music production at Spitfire Audio and a seasoned soundtrack composer, the spotting session often leads to a flurry of creativity: “After the spotting session] I start with a first piece of music which perhaps could be called a suite; a piece that displays the overall mood, features all the instruments I might want to use and perhaps even a main theme.”

A virtuoso pianist, Weder builds his main melodic ideas using his core instrument: “A good tune is always a good tune, even at its bare bones. From there I start arranging with other instruments in line with the brief and creating variations of themes for respective scenes.”

Once a foundational piece or suite has been crafted and given the green light, then comes the trickier matter of fitting the tracks into the picture itself. Writing smaller tracks that reflect and build away from your main themes, moodier or more upbeat variants can give you wider musical clay to work with.

At this stage, it’s essential that you’re able to work within a DAW that is able to handle video capably and without lag. Of course, this is a special on Logic so we will focus on that, but



Tom Holkenborg's home studio, where he composed the score for *Zack Snyder's Justice League*

> "I want to be in control as much as I can. Every step of the way I feel I can add more identity of who I am as a person" Junkie XL

other DAWs are often used. Steinberg's Cubase (and its post-production sibling, Nuendo) and Avid's Pro Tools are famed for video work. Other solid video supporting DAWs include Ableton Live, MOTU Digital Performer, Studio One 6 and, of course, Logic, the focus of this guide.

Whichever DAW you use, synchronisation between audio and visuals needs to be firmly locked in-place, so have eyes on the video project's SMPTE timecode so you know to the millisecond how to edit your cues. Should there be any discrepancy with the audio/video sync due to your display settings, some DAWs allow you to offset the timecode slightly (during playback only) as well as route different audio feeds to sync with the video projects.

With the project loaded up in your DAW, it's time to write in earnest. It pays to keep those spotting session notes to hand, as well as any further insight from the creative team, and tonal indications from any temp track or suggested listening. With that in mind, you want to infuse as much of yourself into the soundtracks as possible, so strike a balance between your own sensibilities and the needs of the project.

For the world's most revered composers, of the ilk of Hans Zimmer, Hildur Guðnadóttir, Trent Reznor or Junkie XL, applying their personal stamp on the media is hugely important, regardless of the size of their teams.

"I want to be in control of every step of the process. When I can, I love to record the orchestra myself," Junkie XL, aka Tom Holkenborg, told us recently. "I still mix all of my film scores by myself. I still master all my recordings myself, I deliver all these stems to the final product myself. I want to be in control as much as I can. Every step of the way I feel I can add more identity of who I am as a person."

While Holkenborg is at the very summit of success as a soundtrack composer, the principle of being recognised for your particular style is key to ascending in the industry. Though you might not have the same wealth of resources as Holkenborg, don't over-lean on existing soundtrack-tailored sounds, presets and libraries. Instead use them to complement your own sonic aesthetic, and build your own.

While there's been a general trend towards subtler instrumentation and sound design approaches, it helps to have a few core motifs to intersperse throughout the project. They might be character-aligned melodies, or phrases that reflect a bigger theme or smaller subtext. Either way, they're powered by repetition, akin to a top-line hook in a commercial track.

The distinctive flavour of our soundtrack needs to work for the film, yes, but if your elements are consistently characterful, then they should be able to stand on their own two feet as a consistent piece. Think of the acclaimed soundtracks for films like *Blade Runner*, *The Lord of the Rings* trilogy and *Soul* – all captivating listens in their own right.

In the next few sections, we'll shed some light on the interplay between music and sound design, look at some essential libraries and tools that every working soundtrack composer should have to hand, and explore the balance between writing directly to picture and developing a library of ready to go cues for production music and sync purposes.

Learn from the best

We asked respected soundtrack composer Jonah Sirota what advice he'd give to anyone making their first start in the soundtrack composing world. "First, don't underestimate the importance of staying up on technology and production techniques," Jonah says. "In soundtracking now, you are expected to be the one who knows how to deliver great-sounding files in the correct format and on time. I look forward to when I will have a team with a mixer, orchestrator, editor, copyist, recordist, and recording and mastering engineers. But for now with most projects, it's on me to do all of that. The other thing is that, in this field, you can be called on to do any genre at any time. But that doesn't mean that you shouldn't develop your own style, the thing you're really good at. People will hire you because of what your music sounds like, not because you can throw anything together."

It also helps to just be a friendly person to work with. Advice that Oliver Patrice Weder emphasises: "Keep your eyes peeled for opportunities, any kind. In the beginning, it's important to throw yourself out there, take any project and network when you can. But above all, be nice and cool to work with."

Sound design approaches in modern scores

The boundary between sound design and score has blurred in recent years, as melody and abstract sonics fuse to create today's modern soundtracking norm

Once a strict division, now the musical score and the sound design of a film's world has moved much closer together over the last few decades. Directors and lead creatives increasingly generally seek a more holistic approach when considering the overall aural approach. Writing soundtrack cues which aren't strictly musical, but tension-stoking or attention-grabbing events has now become standard practice for composers.

One of the most notable watershed moments in this stylistic trend was the infamous "BRAAAM" sound which first accompanied 2010's *Inception* trailer (and appeared throughout its soundtrack). Now something of a byword for a style of hyper-cinematic trailer, Hans Zimmer's deployment of ultra-sub bass and horn-like seismic events resonated deep within our senses. It promised size, it promised spectacle and more importantly, it psychologically re-sold the notion of going to the cinema as not just checking out the latest flick on a bigger screen, but being part of a physically affecting, multisensory experience in which we could immerse ourselves.

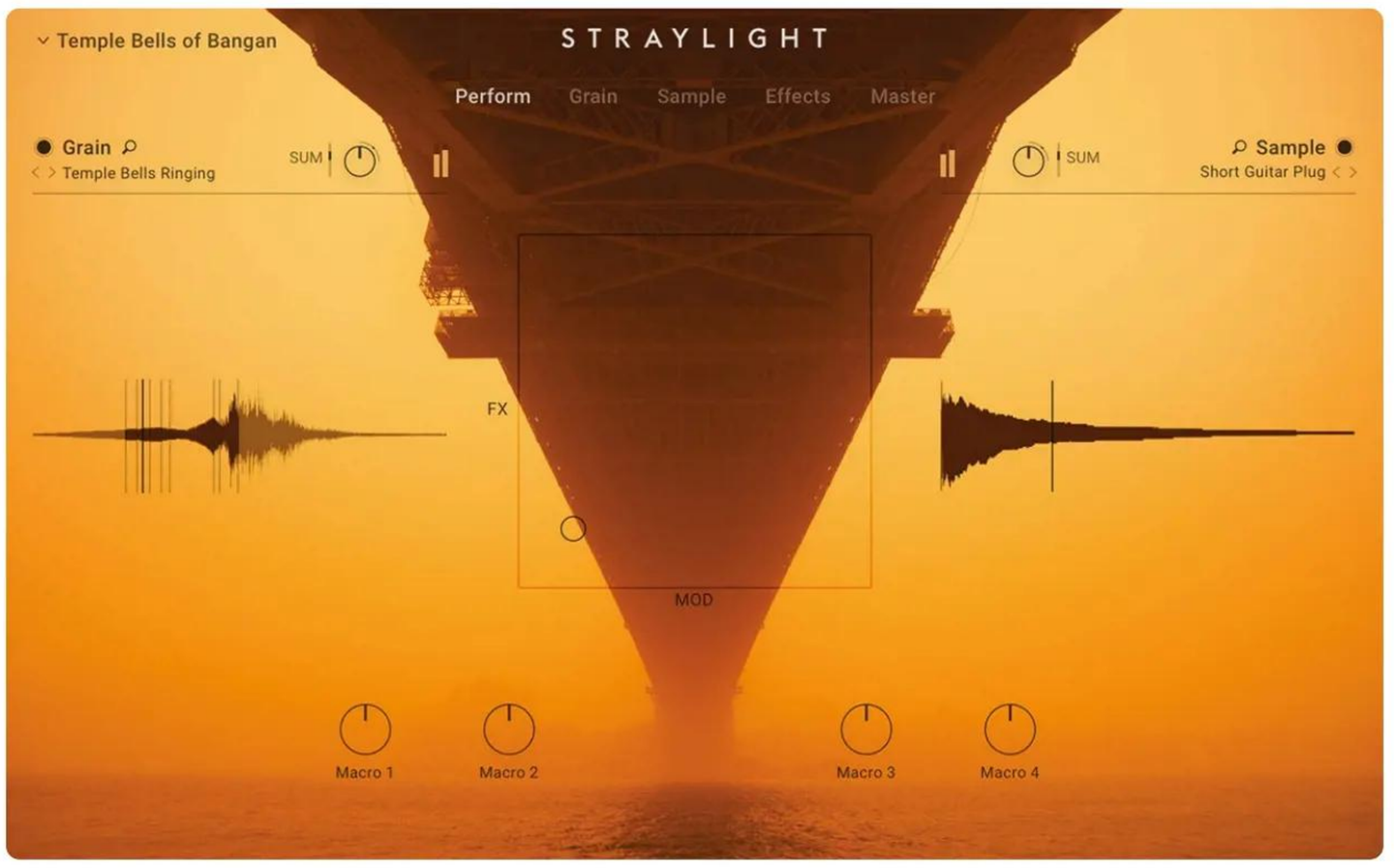
Zimmer's incorporation of electronic music techniques, processed instruments and more amorphous textures in his soundtracks has helped to popularise this mindset. The late Jóhann Jóhannsson's soundtrack for 2016's *Arrival* is another key example, fusing traditional woodwind with tape loops, heavily treated vocal effects and polyrhythms. Jóhannsson's score was written in close collaboration with the film's editor, and worked as a conspicuous character within the communication-themed movie. Johan used fragments of melody and delicately mixed vocals that eventually coalesced to sonically reflect the film's concept. To underscore the circular language patterns that the film's aliens speak, Johan reverted to a tape-based approach. "I have a 16-track analogue tape recorder [...] and created a loop, rather a long tape loop, which I used to stack layers and layers of various instruments, like piano, without the attacks," Jóhannsson told *Consequence of Sound* in 2016. "So we just recorded the tone of the piano, not the attacks."

On his *Arrival* soundtrack, Jóhann Jóhannsson emphasised the film's major theme with vocal loops

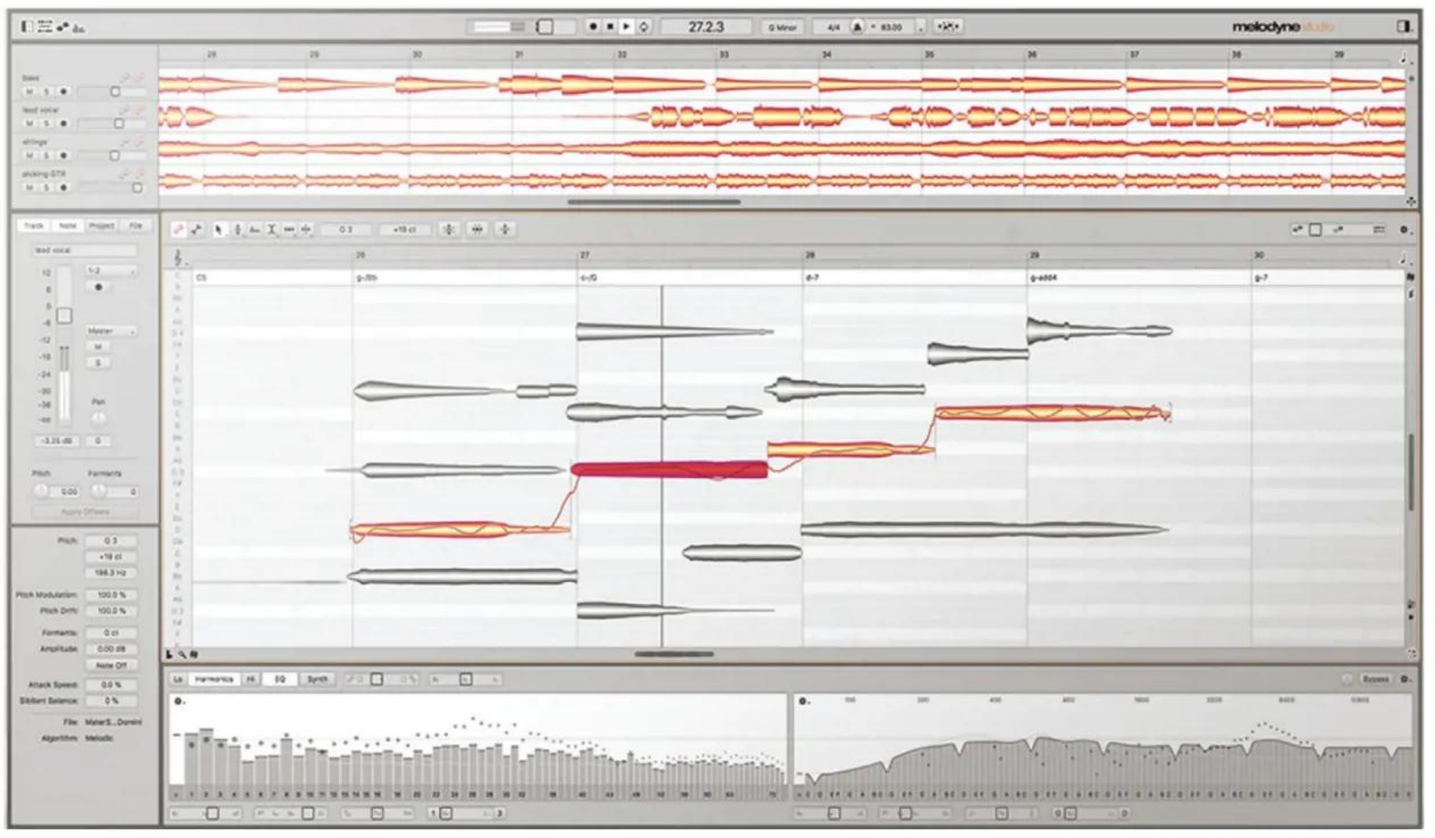
Modern soundtracking of this type goes far beyond rustling up melodic themes. It requires the composer to anticipate the intended impact of the overall picture, and be more technically involved with the editor and director to lock cues tightly with each shot. Maximising the impact of both the underlying themes, and the atmosphere of the world. Learning how to work in this way necessitates a lot of constraint too. Within dialogue-heavy scenes particularly, key lines might need some all-too-subtle emphasis, yet you need to be sure that the music you're deploying doesn't intrude in the frequency domain of the dialogue.

In practical terms, then, how can we transition our thinking to be able to tackle such a less musically oriented project? Firstly, it helps to experiment. Sound design is all about building new textures, and taking existing

Sound design is all about building new textures, and taking existing sounds and moulding them into new ones



Native Instruments' Straylight is a superb tool that can be used to craft textures both epic and ambient



Using time-stretching features within software like Melodyne can transform your sounds

sounds and moulding them into new ones. To keep your sound original, sampling real world sounds is a great place to start. Using pitch-shifting and time-stretching features (such as Logic's Time/Pitch Machine or Celemony's Melodyne) you can contort these starting point sounds into characterful new shapes. Spatial effects, such as reverb, echo and delay can give both size and resonance to your sounds. As with mixing a standard track, spatial effects can be deployed to glue the more abstract sonics with the musical or melodic information that's concurrently happening.

Movement can be key to your sounds feeling like an organic part of the world. Using LFOs and slow attack/decay envelopes to build ominous, rumbling pads can create a greater feeling of immersion. Boosting and cutting key frequencies in sync with the picture is another route to sonically reflect that the sound is responding to the events on-screen.

Using these kinds of approaches, you can start generating abstract sounds and malleable texture to play with. While it's exhilarating to jump down creative rabbit holes, an eye must also be kept on the usability of this growing repository. You don't want to be dealing exclusively in attention dominating, hyper-loud cues. You need variety, and more often than not, you need subtlety. More static atmospheres are something which all filmmakers (and TV show and video game composers) aim to convey quite frequently. Increasingly, it's the sound design that plays the largest role here.

To prepare for these kinds of static atmosphere-reflecting challenges, it helps to get in the habit of crafting tracks that are designed to evoke particular environments. Think of all those animated, off-the-peg synth presets that are labelled with such monickers as 'Sad Cityscape' or 'Scorching Desert'. Wouldn't it be nice to have your own unique batch of sounds, ready to be called up as a starting point? With those types of locations in mind, having a stab at writing several three to four-minute pieces that are intended to evoke a certain geographical aesthetic is a top exercise for budding cinematic sound designers.

The fusion of soundtrack and sound design has undoubtedly heightened the experience of watching a film. While there's still much to be said for a compelling melody or magical theme, music now exists within a much more organic and all-encompassing sonic universe, being just one of many elements that work to place the audience in the same physical or emotional space as the visuals.

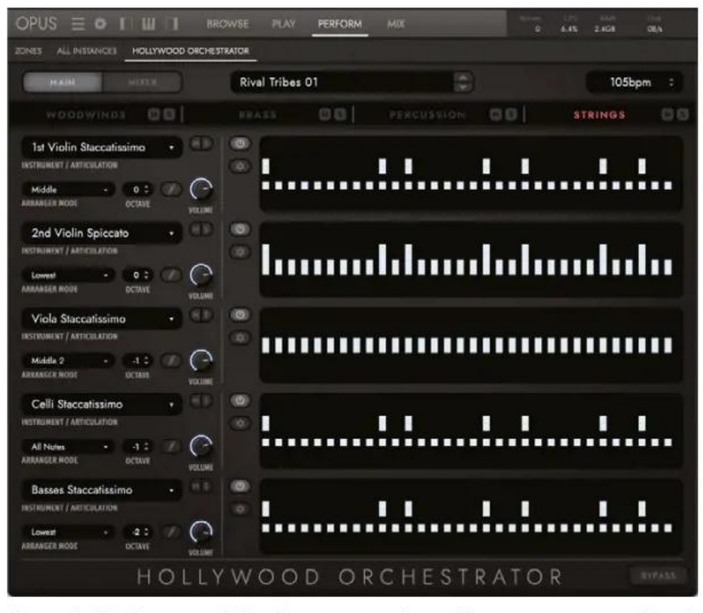
Pad principles

Subtlety goes a long way. Often, you might want to suggest musicality, without writing anything too kinetic. Ambient pads are a solid way of colouring your soundscape and bridging the landscape of the visuals with the score's musical groundwork. Typically, ambient pads are constructed using a gradual attack times, long sustains and a slow release so that the sound gently fades into the ether. Beyond reverb and delay (which are something of a given when dealing in pads) small amounts of modulation such as layered noise, filters (particularly high-pass) that slowly open and close as well as quiet, subtle arpeggios can add the right amount of underpinning throb and texture. These might do wonders when sonically representing a starship bridge or control room, as well as direct the musicality of any incoming melodic cues. If things still sound a little flat, then adding some vibrato by modulating the pitch of one of your oscillators can really bring some life to proceedings, and better reflects a live instrument. In a mix context, you'll want the pad to span the stereo image. Panning each voice to different stereo channels is a quick route to building the illusion of scope.

The composer's core toolkit

With such a massive array of soundtrack-aimed products out there, it can be tricky to know how to start. From expansive orchestral libraries, malleable atmosphere-carvers and thunderous impact engines, let us guide you through some of the best big-screen tailored tools around...

Ethera Gold provides soul-touching choirs and strings



Opus's Hollywood Orchestrator is an instant cue-maker!

With the utmost respect for those god-tier composers that scored the films of our childhoods, most of us will never get the opportunity to stand before an orchestra and, baton in hand, conduct an auditorium full of distinguished musicians. Yet, with the increasing realism and expressivity of orchestral sample libraries, we can in essence do just that, albeit from behind a screen.

While initial forays into sampling orchestras for commercial release stem as far back as the 1980s, it wasn't really until the boom in computer-based production around the mid-2000s, when companies such as Garritan, East West and VSL brought out the earliest foundational touchstones, and paved the way for today's sample instrument landscape. These early releases sported many then-innovations that we now take for granted.

While earlier attempts at orchestral sampling were restricted by slower processing power (or locked within external hardware samplers), these newer, larger libraries allowed for greater expressivity with multiple-instrument articulations, the introduction of round robins

At the summit of modern soundtracking is Hans Zimmer, within his moody studio is a plethora of inspiring tools

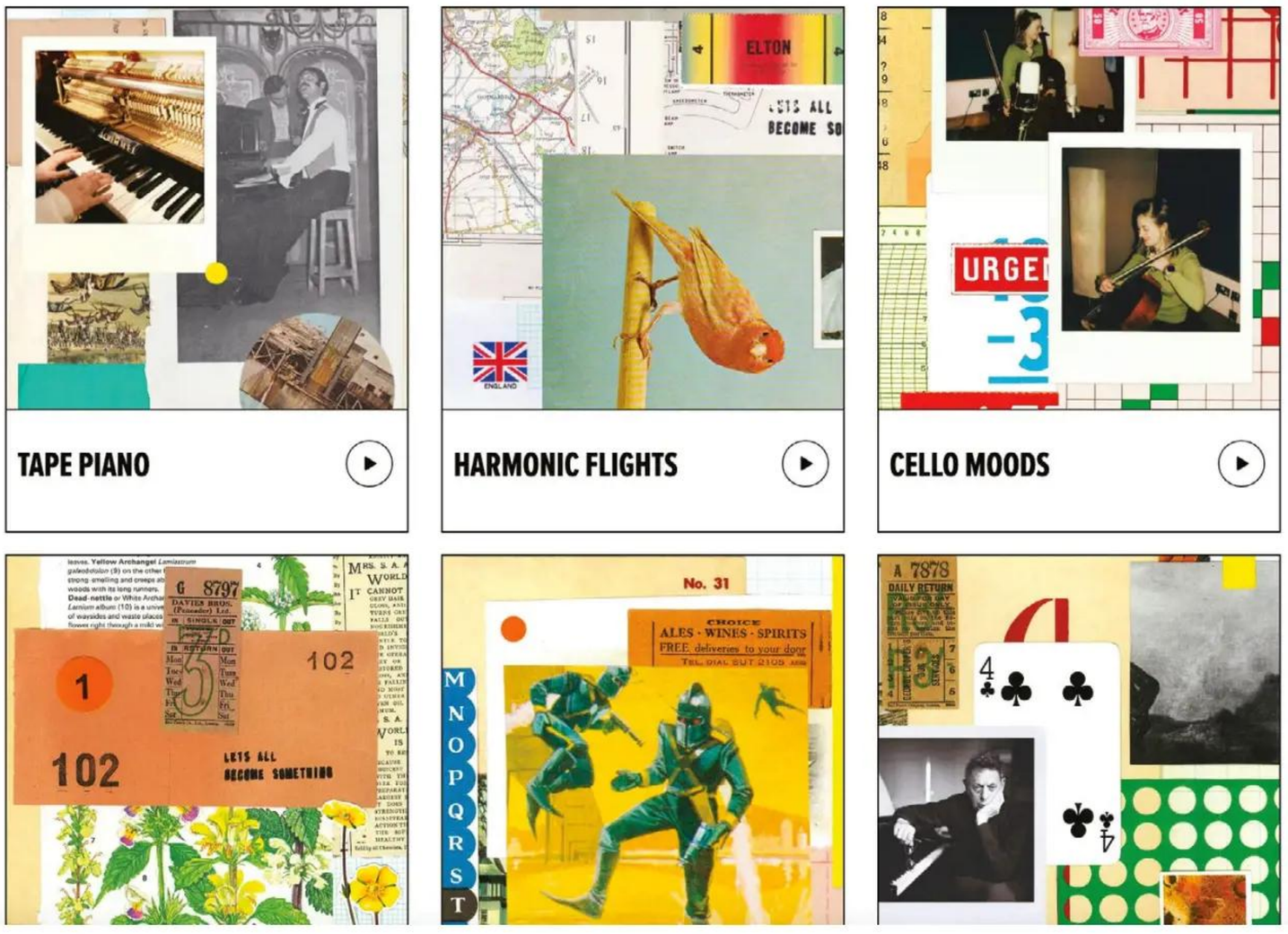
> Consider them as routes to carve your own final product, and not 'soundtrack generators' to rely on exclusively

(not repeating the same sample recording twice, aiding the perception of humanity) and the ability to help capture multiple virtual mic positions simultaneously.

In the late 2000s, computer processing adapted to a new 64-bit norm. Leading DAWs began to support the brisker speed of this faster generation of CPUs resulting in an explosion in orchestral sampling. Huge, immaculately recorded orchestras could now be rendered in real-time within your projects, and multiple sample libraries could be used simultaneously. Skipping ahead some 15 years, and here in 2023, we're blessed with thousands of hard-drive space-swallowing virtual orchestras, many of which have been refined by those companies who took that early lead on pushing this new medium to its current state.

Companies such as Orchestral Tools, Spitfire Audio, the aforementioned EastWest and VSL, Cinesamples and Audio Imperia lead the charge in the marketplace, with a plethora of exemplary products, many of which have been tailored to a particular compositional niche. Others aim to be the only package you'll ever need.

EastWest's Hollywood Opus Edition is one such example. While the addition of over a decade's worth of the Los Angeles-based company's sublimely recorded sample instruments presents a treasure trove of riches, Opus also innovates with a novel approach to using these sounds. Its Orchestrator enables users to play a few basic chords via their MIDI keyboard, which triggers the Orchestrator's



Make sure you download some of the superb mini-offerings from within the free Spitfire Audio LABS range

smart engine to act as a creative collaborator, and shape new, real-time arrangements that complement and enhance your simple input by using the full force of its numerous libraries. If you've ever wondered what jamming out your most shabby chord sequence ideas with a world-class orchestra might feel like, this will give you a taste.

While the all-bases-covered ambition of EastWest's flagship comes with a weighty price-tag, for those who want to just augment an existing tone, Spitfire Audio's LABS range of bite-sized sample instruments are a pick 'n' mix of free, flavoursome acoustic instrument textures. From guitar harmonics, felt piano, pipe organ, choirs to the more abstract world of atmospheric soundscapes and moods, Spitfire's musician-curated series will certainly have more than a couple of complementary additions to your soundtracking toolkit. For that (non-existent) price-tag, hoovering up some LABS packs is a highly recommended first step for any budding soundtrack composer.

Spitfire Audio has also been the collaborator of choice for Hans Zimmer, releasing the titanic Hans Zimmer range of Strings, Percussion, Piano and Drums, as well as recent collaborations with the BBC and Abbey Road Orchestras. These flagship products have ushered in some remarkable advances, furthering the number of articulations, expanding the capabilities of dynamic layering, effects and becoming more versatile via high-quality mic positioning.

Beyond the traditional world of the orchestra, modern soundtracking demands pulse-pounding impacts, evocative swells and subtle

Heavyocity's Damage 2 – a brutal beast!

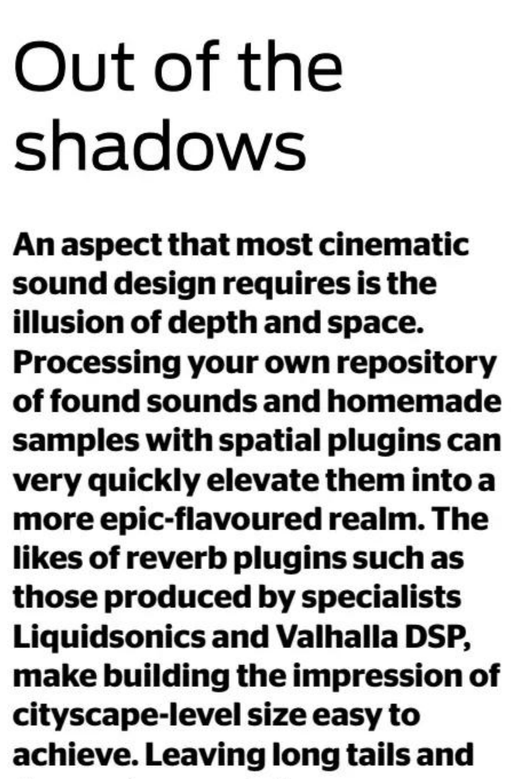
Heavyocity's Symphonic Destruction marries the orchestra with edgy guitars and massive impacts

momentum. Companies such as Zero G and Heavyocity are major players here.

The former have an astounding array of drone and texture creative tools, including their 'creation instrument' Enigma, the ethereal Inner Balance, as well as a large array of soul-touching vocal samples. For our money, Ethera Gold provides the best of both worlds, melding their vocal excellence with a smattering of dense wavetable synth-crafted sounds.

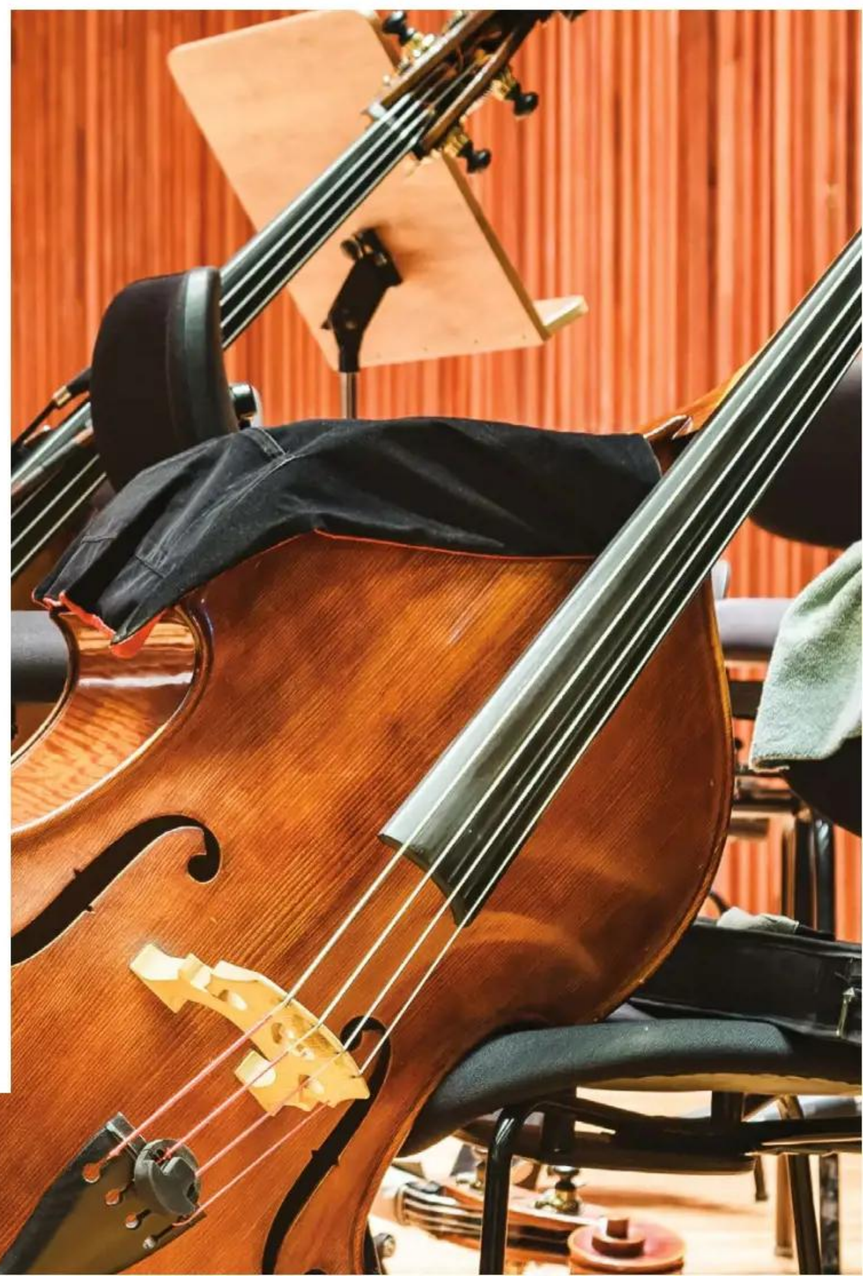
Heavyocity, on the other hand, have particular form for aggressive sounding instruments, impacts and processed effects. Take Symphonic Destruction, a fusion of traditional and hybrid orchestras with heavy guitars, dirty synths and colossal thumps. There's also the revered Damage 2, which provides the perfect means to sync colossal-sounding rhythms and 'punish' them in surprising ways. The company's new Uncharted 88 prepared piano library looks set to further their brutal sonic ethos.

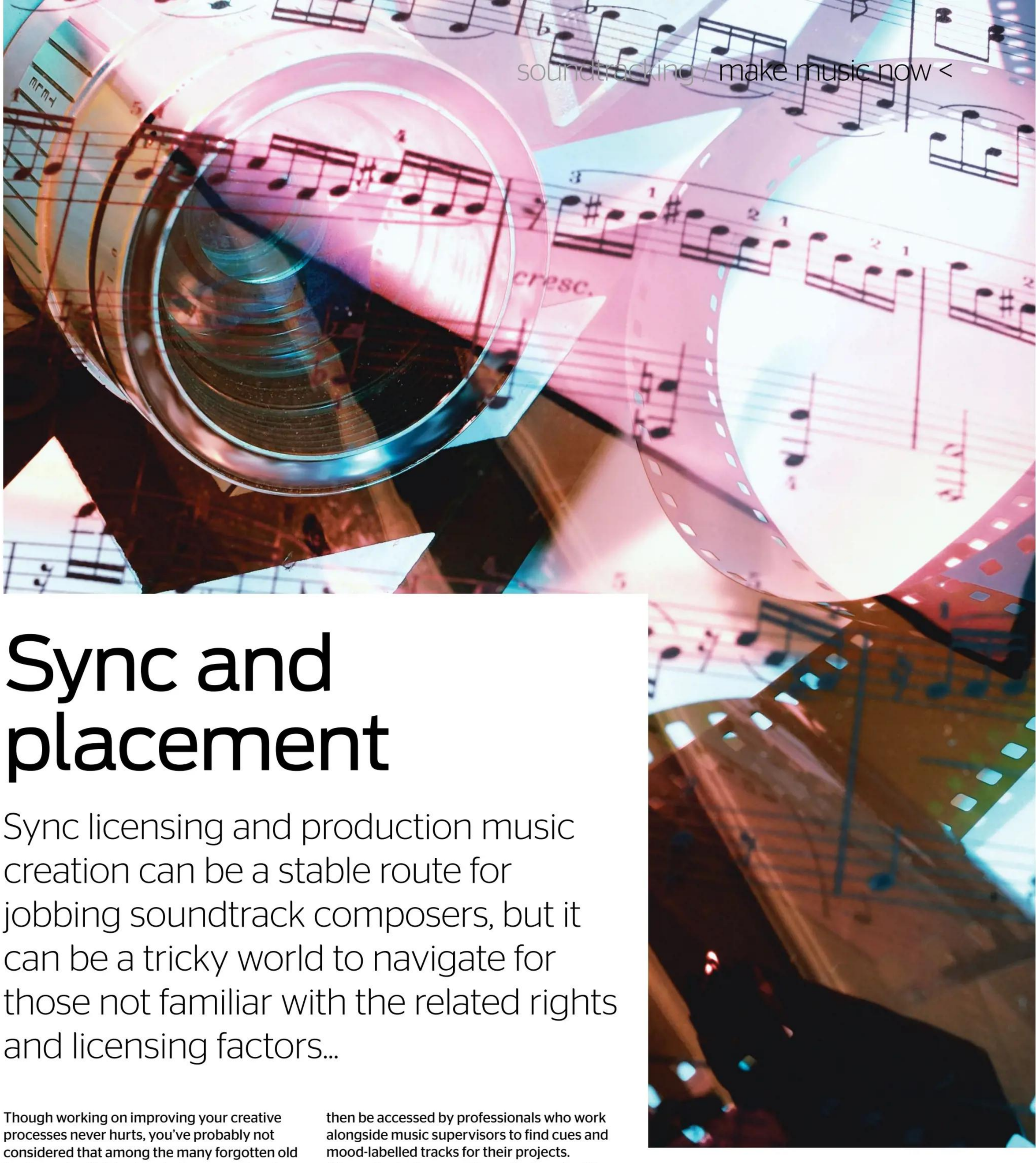
Though there are a vast array of soundtracking tools, the best approach is to really consider them as routes to carve your own final product, and not 'soundtrack generators' to rely on exclusively. To really stand out in this crowded playing field, your own personality, choices and sonic ideas need to bleed through. Try not to ape others too much. Your music should not only serve the project, but reflect your own artistic personality. That said, all of these products are healthy additions to any soundtrackers' resource pool.



Out of the shadows

An aspect that most cinematic sound design requires is the illusion of depth and space. Processing your own repository of found sounds and homemade samples with spatial plugins can very quickly elevate them into a more epic-flavoured realm. The likes of reverb plugins such as those produced by specialists Liquidsonics and Valhalla DSP, make building the impression of cityscape-level size easy to achieve. Leaving long tails and decays is a must. A common practice is the introduction of reversed sounds which make them appear to lurch forward out of the aural shadows unnaturally. Tempting though it may be, coating everything in reverb isn't recommended – be selective!





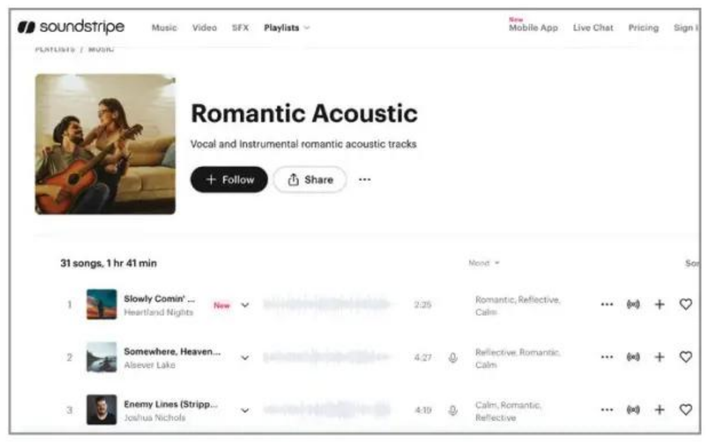
Sync and placement

Sync licensing and production music creation can be a stable route for jobbing soundtrack composers, but it can be a tricky world to navigate for those not familiar with the related rights and licensing factors...

Though working on improving your creative processes never hurts, you've probably not considered that among the many forgotten old tracks and unfinished projects on your hard drive, it's totally possible that there's some perfectly sync-able material just waiting to be unearthed. Sync licensing companies offer the means to offer up your roster of tracks to music supervisors and creatives who spend their time constantly on the hunt for the right material to fit their films, TV shows, adverts and games. But is it really as simple as uploading your tracks, and waiting for the royalties to roll in, as your unfinished jam from 2017 appears on an episode of *Stranger Things*?

Well, no. As with all matters licensing-related, there's a lot to get your head around before you open up your musical wares. Many companies are set-up to expand their large repositories of what is dubbed production music, which can then be accessed by professionals who work alongside music supervisors to find cues and mood-labelled tracks for their projects. Alternatively, there are those that work with you, and help with generating placement opportunities for your work. They will negotiate the fee and often thorny details of rights ownership on a case-by-case basis.

Typically, artists will grant a label or a production music repository (such as Music Gateway, Artlist, Soundstripe or Marmoset) the exclusive rights to licence their track, meaning nobody else can try to get those tracks on screen but them. If you're the sole composer and producer of the track, then you'll be the sole rights holder by default, owning both of the two major copyrights. The 'composition' rights indicate who owns the intellectual property behind the song itself, while the 'recording' rights pertain to that particular version/



Soundstripe provides stock music, SFX and more

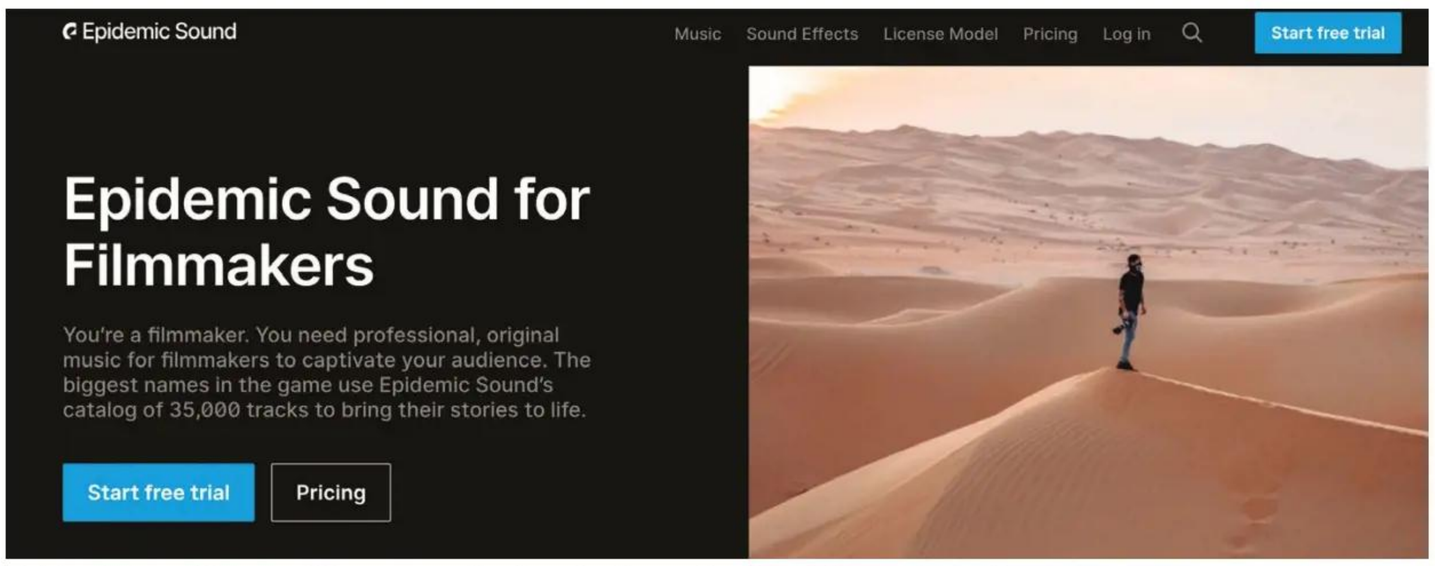
You don't want to be handing over multi-sectioned pieces with a shifting or ambivalent mood

recording of the track. You'll typically be able to keep these when working with a sync library, yet their role as the 'publishing administrator' of the track(s) in question nets them an agreed-on percentage of any income the track generates.

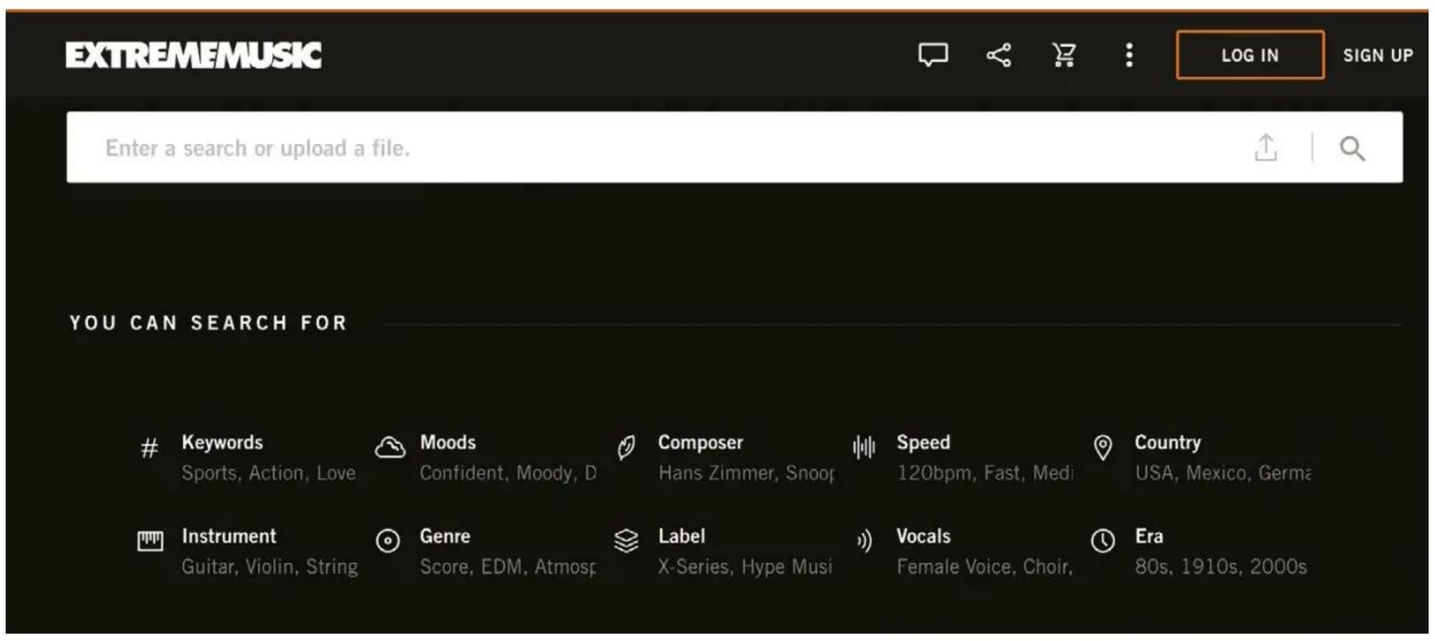
With this in mind, let's think about how we approach actually *making* production music. While there's no reason to be any less inventive, you'll want to write to a more general idea of a tone. Most production music archives are vast, and are tagged with numerous keywords that usually align to a mood. Keep this in mind, and try to write numerous pieces around the same thematic objective. For example 'sad', 'optimistic' or 'ethereal'. You don't want to be handing over multisectioned pieces with a shifting or ambivalent mood. Speaking to *PRS for Music,* production music composer Melody Girl said one of the greatest challenges was crafting music that could potentially suit a wide-range of projects, yet maintains character. "You're trying to create flexibility in the music – something that will work for a variety of different situations and nuances – but at the same time trying to avoid the result sounding like musical wallpaper."

To be successful writing production music, you really need to break out of your own musical comfort zone, and try working in different genres, or moods you've previously not delved into. It stands to reason that the more tracks you have out there, the higher the likelihood that they will be used. Most production music composers submit full albums to labels and agencies, as opposed to standalone tracks. These types of records usually keep to a tight theme, with a range of options for music supervisors to navigate through and find the right fit. Aim to have a healthy output of production music albums, yet make sure you demonstrate a consistent musical identity.

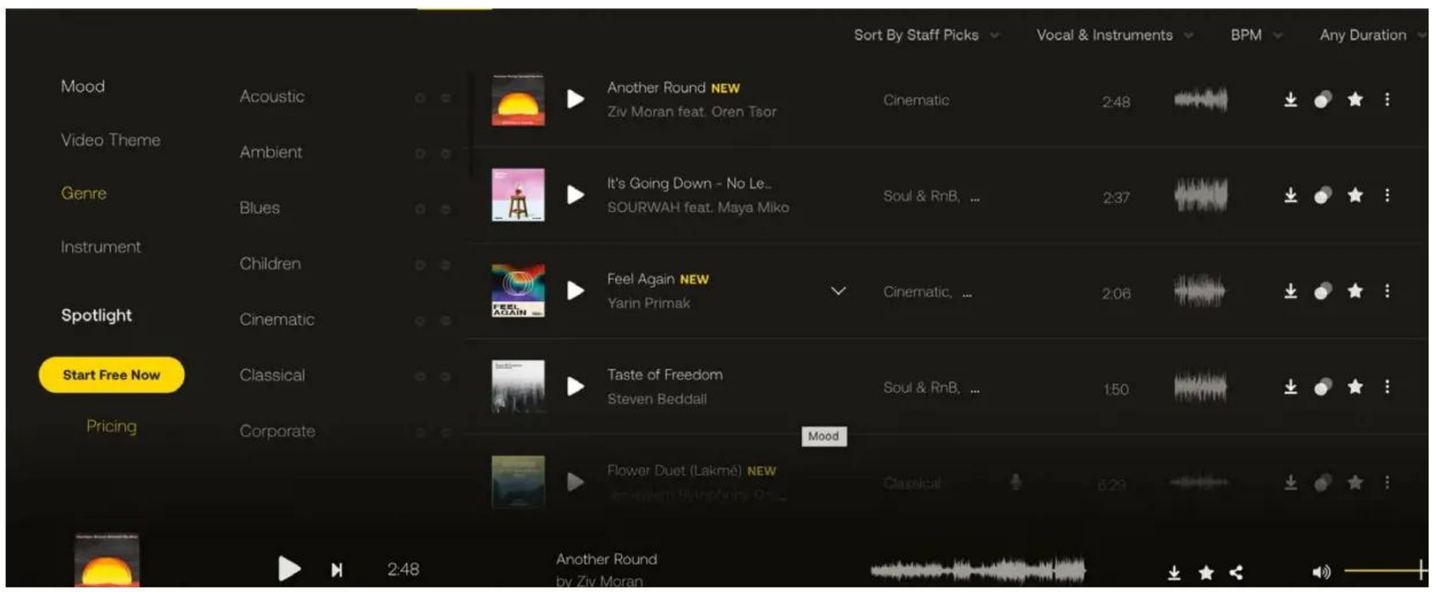
On a housekeeping note, you need to make sure you keep every single project for every track securely saved, as you might be requested



Epidemic Sound is one of the most well-subscribed repositories of cinematic tracks



Extreme Music is Sony Music's sub-company which forges connections between production music and TV/film

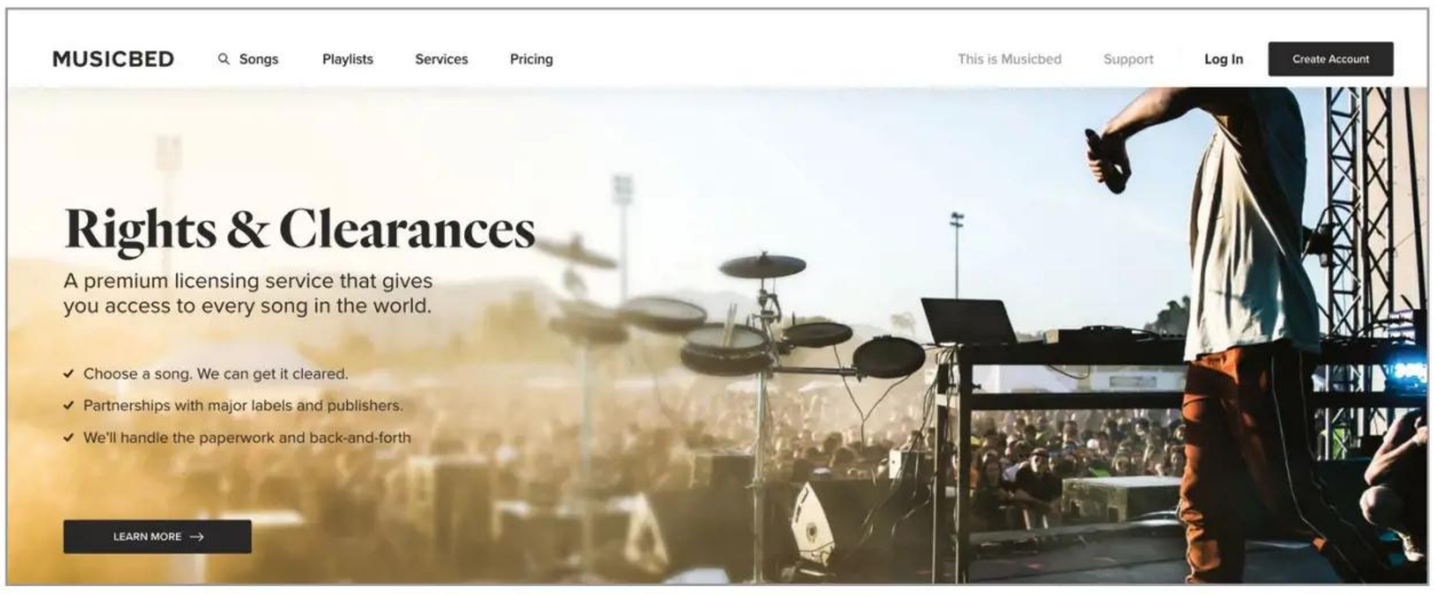


Most sync and production music libraries will have a tagging system for easy navigation, worth remembering!

to submit shorter versions (or a tightly-timed version that better fits the specific scene it's scoring). You might also need to remix, or remove, key track elements.

Though some commercial sample libraries can bring weight and sophistication straight out of the box, using their preset, or dry, sounds might sound a little unoriginal, particularly if you consider that there's likely to be many other people out there leaning on libraries like these to do the heavy lifting. Those who work in the industry are therefore very likely to recognise the tell-tale signature of commercially available libraries. So, using these dry samples on final projects generally isn't advised, not without significant processing at any rate.

Finally, for budding production music composers, make yourself a rigid plan and schedule. Depending on how many tracks get picked up, writing production music could form the bedrock of a very healthy income. So if you want to get into the game, you'll need to treat it as a disciplined job. Have clear objectives and set yourself a timetable for completing albums and sync projects. Try not to write loosely, and instead concoct a word-based roadmap of emotions you want each track to hit. This can give you the direction that you're missing out on by not working with visuals.



On the premium side of things, MusicBed offer up a more bespoke clearance service

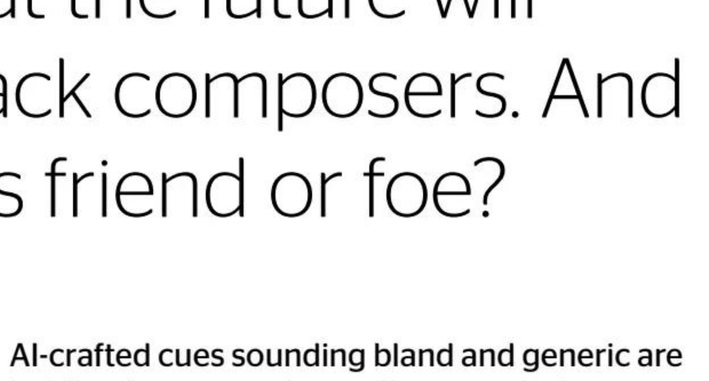
The future of soundtracking

With a constant stream of visual content competing for our eyes and ears, we wonder what the future will look like for soundtrack composers. And wonder whether AI is friend or foe?

Every day, the decisions that shape the future are being made, from the most groundbreaking innovations to the most basic, time-saving ideas. It's a truth that is extremely apparent in the music production world, where multiple new impossible-achieving products are released on a seemingly weekly basis. But it's true also of the world that soundtrack composers inhabit, with new tech increasingly replacing a traditional human role. The threat of a machine-based workforce is something that we might have once smugly thought was something that concerned other industries, that we – the creatives – would never have to worry about. Yet, with recent rapid developments in AI, services like AIVA, Amber and Ecrett Music are able to generate immaculate-sounding, royalty free music, crafted on the spot by super intelligent algorithms, trained to replicate some of the world's finest composers.

Initially dismissed as merely pumping out approximations of what your average composer might quickly rustle together, accusations of AI-crafted cues sounding bland and generic are holding less water. As we discovered when we explored the topic last year in an AI deep dive, these types of platforms are gaining a massive amount of traction with those who need to create the illusion of big-budget, glossy soundtracks when actually working to a very tight (or no) budget.

For DIY content creators, such as YouTubers, podcasters, or advertisers, having this arsenal of tracks on-tap is undeniably a positive, and an understandable investment (most require a monthly fee). Algorithmic compositional strength is increasing with each track they deliver, and have undoubtedly replaced a role once filled by a human composer.



AI platforms like AIVA are remarkable in how they build sublime scores on-the-fly, but are they a threat?

While these kinds of technological woes might keep some awake at night, for companies like DAACI, a London-based AI company founded by musicians, AI isn't the job-killing threat it's often painted as. DAACI's goal is to create a system that can generate creative options based on an input. They say that their major objective is to simplify the option-generating process that composers typically use anyway.

"It is very much working in tandem with the composer," the company's CEO Rachel Lyske told *Audio Media International* last year. "DAACI isn't a replacement for a composer, it's an enhancement of their process. They might choose it to replace their process but it's certainly not replacing the composer. In reality,

"Just when it seems like things are stuck, there are always new voices." Jonah Sirota

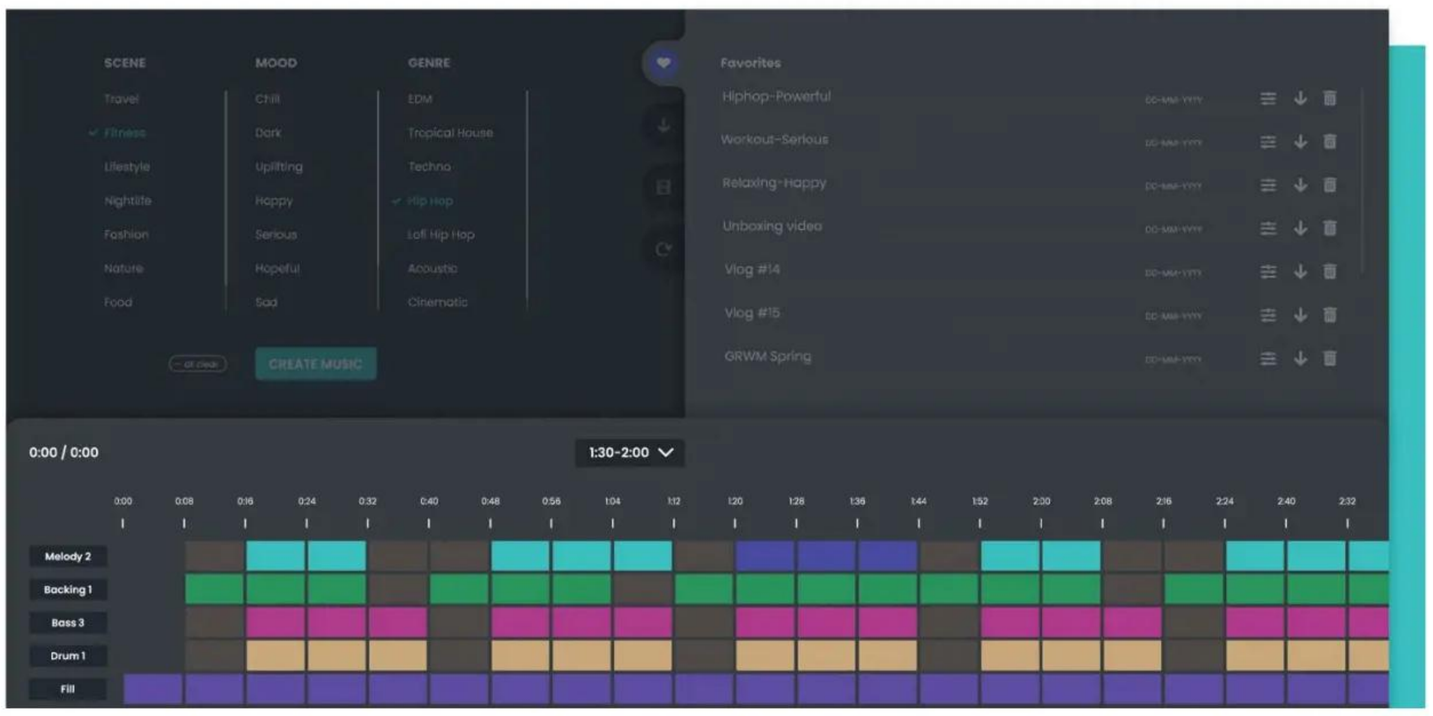
most commercial composers already have heaps of options to play with, and we're just providing a similar [mechanism] for everyone else. We respect that composers do that, and we're enhancing that approach."

There's also the increasing prominence of video game soundtracking (which would require its own focused feature to cover entirely!). While this medium is still working its way into mainstream acceptance, and becoming more central to the majority of people's lives, the popularisation of the much-promised 'Metaverse' or fully-immersive VR content will undoubtedly require soundtrack composers to be much more focused on space, position and 360 degree considerations, way beyond the music itself.

Beyond the technological, there have been some noticeable creative trends of late. Perhaps as a response to repositories of more library and AI-driven content, the notion of the soundtrack composer as a singular artist is undergoing something of a renaissance right now. Oliver Patrice Weder says he's particularly enamoured by the more experimental direction that many soundtracks have taken. "It's beautiful how new talent emerges and naturally they bring new sounds and approaches to the table," Oliver tells us. "There's a lot of experimentation going on, Cristobal Tapia De Veer with *White Lotus* or Hildur Guðnadóttir with *Chernobyl* or *Women Talking* more recently. I observe more song-like soundtracks and sounds that aren't typically attributed to a film score (namely, no traditional orchestra) as well as a lot of sound design within the scores. That's not to say that the traditional scores are vanishing, there's still plenty of it and there will always be a need for that kind of approach too."

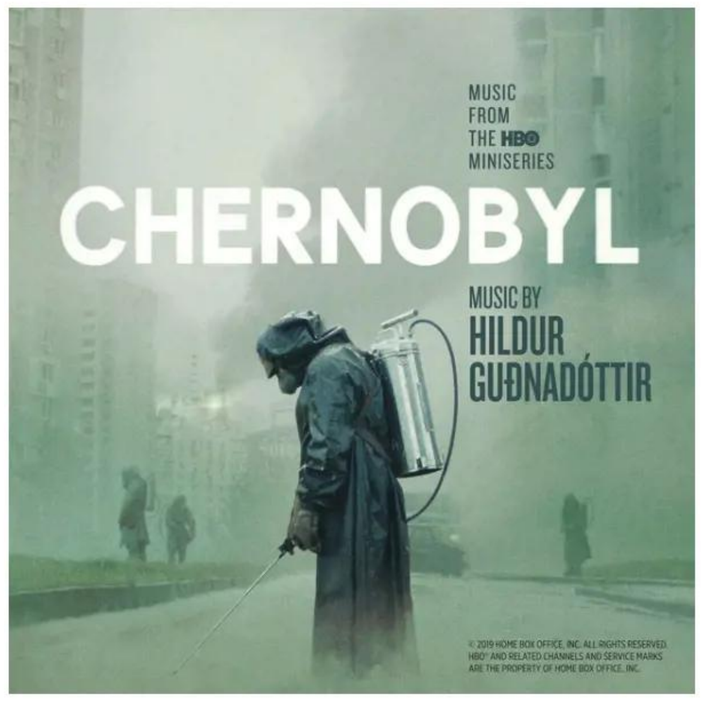
Oliver's appreciation of these singular voices is echoed by composer Jonah Sirota, who, as well as sharing Oliver's appreciation of Cristobal Tapia De Veer's extraordinary *White Lotus* soundtrack, says his perception of a monolithic trend of recognisable tropes has been shook by the influx of fresh composers. "There had seemed to be a clear 'direction' that scoring was heading in for a few years there – a pretty universal set of style expectations coming from the world of film. More recently, that seems to have been disrupted by an explosion of streaming content and creatively daring games, often created on a budget by young and hungry creators," Jonah explains, "It has blasted the doors wide open, stylistically, for what 'soundtrack' music can be. I love, for example, Dan Romer's soundtrack for *Station Eleven* and Son Lux's brilliant score to *Everything Everywhere All At Once*. Just when it seems like things are stuck, there are always new voices."

DAACI aim to create an AI-based system that aids composers and provide them with a wide resource-set

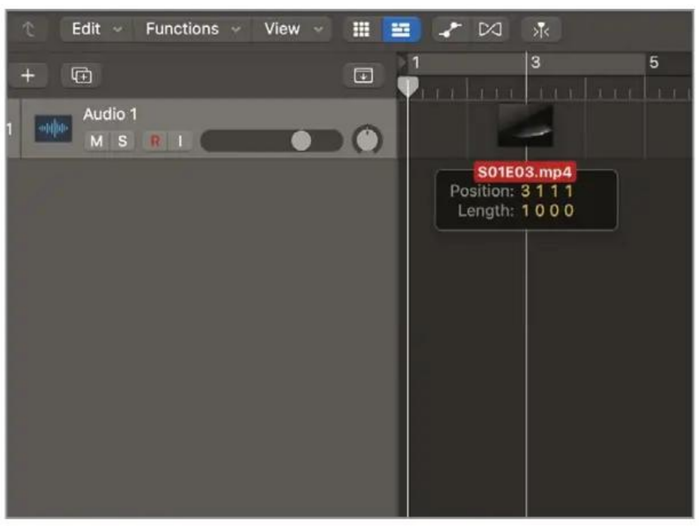


AI compositional tools are getting better at responding to inputs, and can carve their output for a range of needs

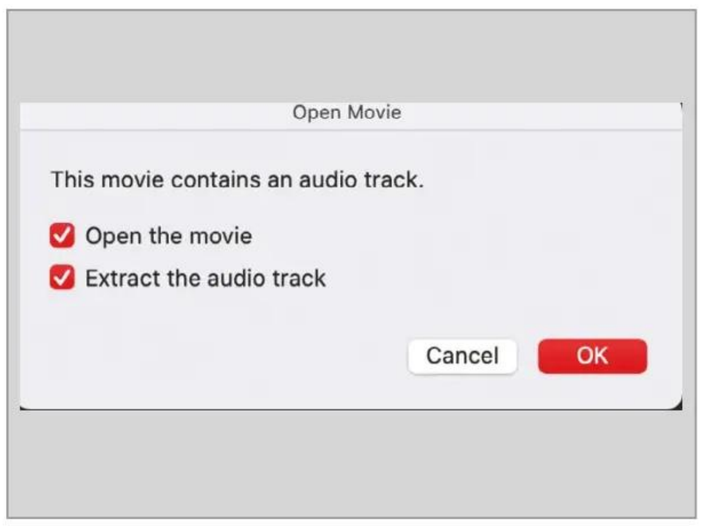
Oliver Patrice Weder is a champion of the experimental



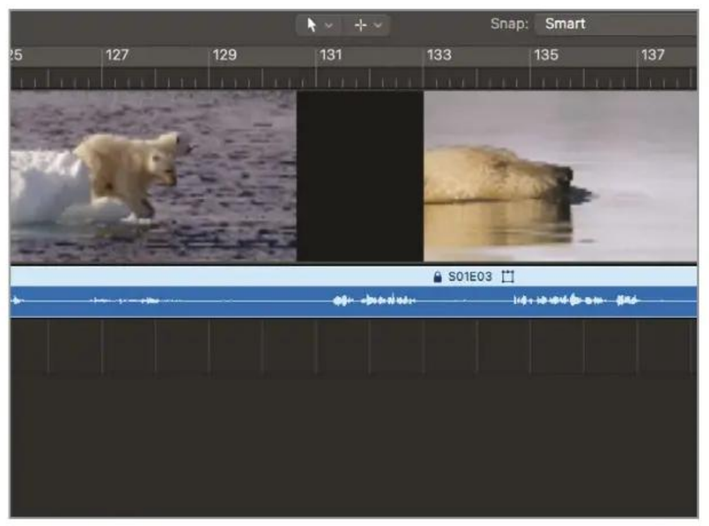
> Step by step 1. Writing to picture in Logic



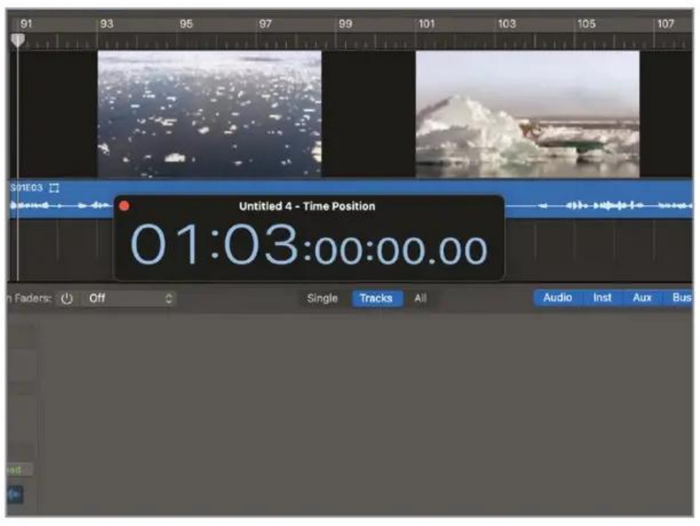
1 > As a Logic user, you may not be aware of the DAW's versatility when it comes to writing to picture. You're just about to find out! Import your video file by dragging and dropping it into your project, this will automatically create a new track.



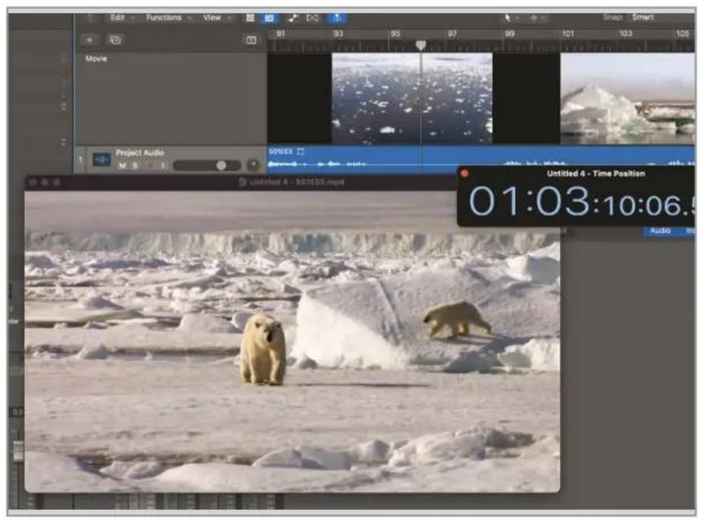
2 > You'll be asked whether you want to import the audio into your project – If you're soundtracking a project with dialogue and V/O you'll definitely want to keep the source audio, if you're soundtracking purely to visuals or a temp track you might not.



3 > With the video (and its audio) in two separate, locked tracks, you need to make sure that the video's original frame-rate and audio sample rate aren't knocked out of sync by any of your existing Logic settings. Adjust to source if so.

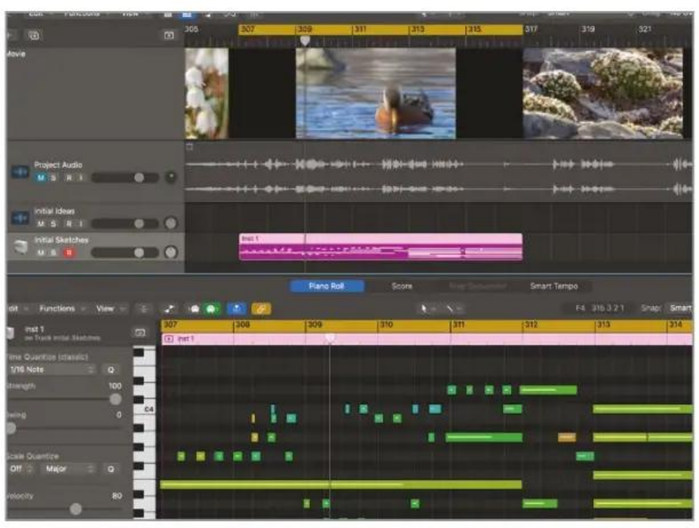


4 > It's also vital that you make sure the SMPTE timecode of your video file is aligned perfectly with Logic's Time Position, you can view this in larger form by clicking on the dropdown next to the transport controls and clicking Open Giant Time Display.



5 > While the video track contains thumbnails of key moments, you'll really want to pay attention to the left-hand corner, where you'll see the video playback. You can also render the video as a floating QuickTime window in a project.

6 > Rather than be overwhelmed by the whole project, it's best to work a section at a time. Highlight a key sequence, loop it, and begin to create rough ideas in response to the visual stimulus using your instruments.



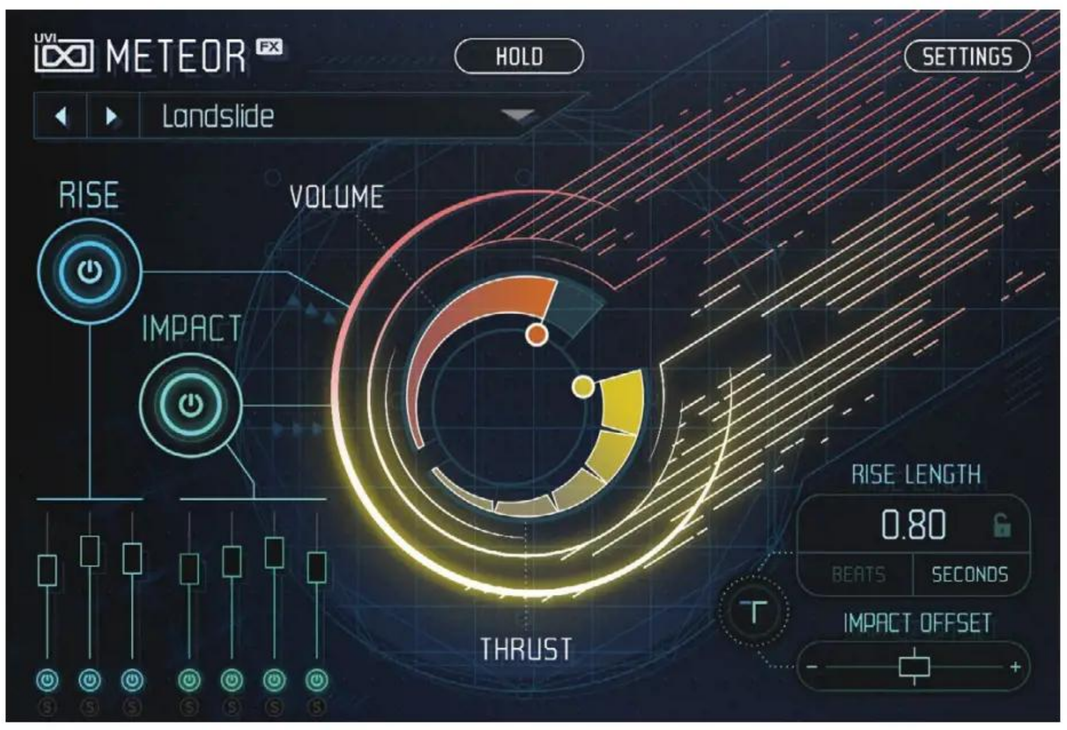
7 > Your sketches should match the momentum and rhythm of how the director has edited the shots, while evoking the mood and setting of the overall piece. Working through the project, you can start to gradually fill-in various key themes and moments. Colour-coding is a useful practice here.

8 > While the project might take a while, periodically save out your revisions by going to File > Movie > Export Audio To Movie. This will Bounce your new video track with your new musical ideas as the audio. Ready to send on to the higher-ups for approval.

9 > While video editing itself is off the table, it's fine to remain in Logic to grow these initial sketches into larger, ready-to-go final arrangements. As you continue to refine your ideas, further instrumental flavours and textures can expand your own vision of the project's sonic universe.

6 of the best sound design plugins

An integral facet of modern soundtracking, sound design is a practice well catered for by any of the following...



UVI **Meteor**

Mac/PC £132

UVI's swell and impact designer is a joyously dramatic tool that can inject much needed punch to your soundtracks and sound design cues. In addition to its banks of layered swells, crescendos and hits, Meteor sports a colourful effects section that allows greater modulation, it's also got a very intuitive UI that encourages experimentation and randomisation.

www.uvi.net

Native Instruments **Straylight**

Mac/PC £179

Native's granular synth is angled at those immersive, enveloping sound design mixes that have so defined modern epic cinema's best aural experiences. With a series of lush sound sources as its bedrock, Straylight enables you to build ambient atmospherics via its granular sample modules. Crafting unnerving, otherworldly textures has rarely been so much fun.

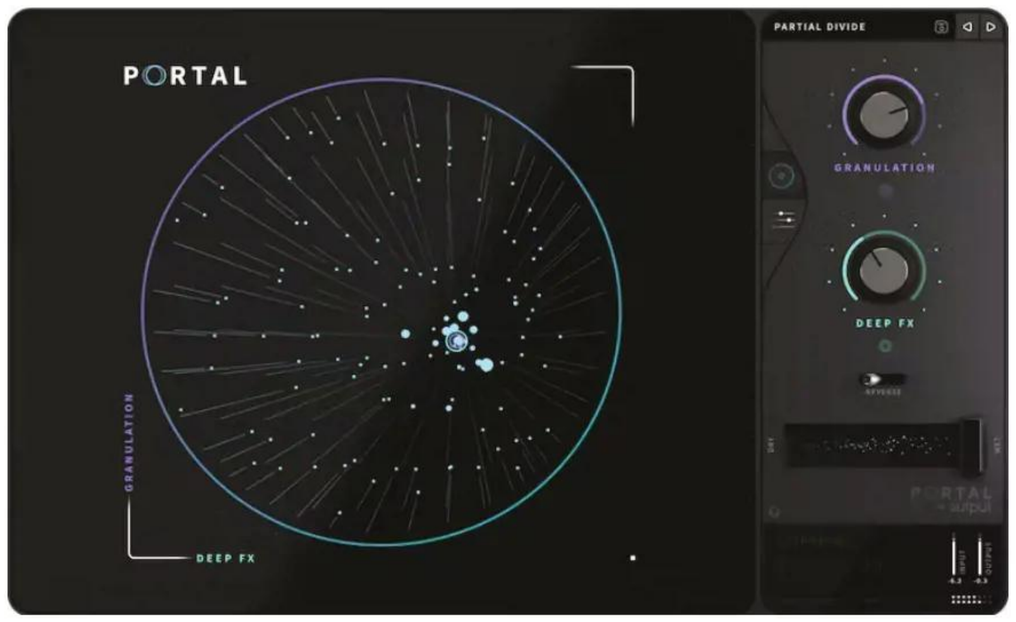
www.native-instruments.com

Output **Portal**

Mac/PC £131

Presenting the means to re-configure the way you make music into a granular world of swimming, interlocked textures, Portal can shake up your starting point so as to unrecognisable, pushing you down all manner of fascinating sonic highways. Its simple X/Y pad belies its deeper under-the-hood abilities to stretch, morph, quantise and pan your grains like putty.

www.output.com



Heavyocity **Gravity**

Mac/PC £399

Continuing in the epic vein, Heavyocity's spacious Gravity is a suite of vibrant hits, pads, risers and cinematic stings, melding the orchestral, electronic and sound design worlds as many modern soundtracks tend to. Its motion step sequencer is a dab hand at creating tempo-synced arpeggios and throbs, while its disturbing array of FX sequences range from the subtle to the downright terrifying.

www.heavyocity.com

Zero G **Ethera Gold 2.5**

Mac/PC £115

Another hardy film-scoring workbench that melds strings, impacts, effects and hybrid instruments, Ethera Gold also includes a range of emotion-affecting vocals in both male and female flavours. Its wavetable Core Synth textures incorporate samples of instruments such as brass, horns and string textures, while its multi-layered Vocal Synth is a true thing of wonder.

www.zero-g.co.uk

Spectrasonics **Omnisphere 2**

Mac/PC £410

A well-established staple of the soundtracking world, Omnisphere's reputation is built on its incredible depth, featuring top-notch banks of presets and artistically crafted patches as starting point, its 500 DSP wavetables, state variable filters and quad-layered pads provide plenty of scope for evolving wildernesses of sound. A real beast.

www.spectrasonics.net

6 of the best orchestral libraries

The power of an orchestra lay behind many of the best scores ever...

Audio Imperia **Jaeger**

Mac/PC £490

Aimed at those pulse-pounding Zimmer/Holkenborg-adjacent creatives, Jaeger's video game-recalling UI hints at the type of epic-scope that it expects you to be writing towards. It's easy to concoct speaker-decimating horns, booms and intense orchestral tension. Bridging the musicality of the orchestral world with the coloration of sci-fi flavoured effects, Jaeger is the aspiring blockbuster soundtrack-maker's dream.

www.audioimperia.com

EastWest **Hollywood Orchestra Opus**

Mac/PC £799

EastWest's Hollywood Orchestra Opus Edition is a one-stop shop for orchestral punch. Spanning the industry-leading sample library company's peerless roster of existing libraries, as well as a new violin section and redesigned interface, this immaculately crafted suite has little competition when it comes to attention-grabbing brilliance.

www.soundsonline.com

Spitfire Audio **Symphonic Strings**

Mac/PC £489

Spitfire's 'definitive string orchestra', Symphonic Strings is all about getting a blockbuster-ready sound. Sampling 60 players performing 175 articulations at AIR Studios, the London-based heavyweights have perfected home orchestration. Captured with some truly priceless valve and ribbon mics.

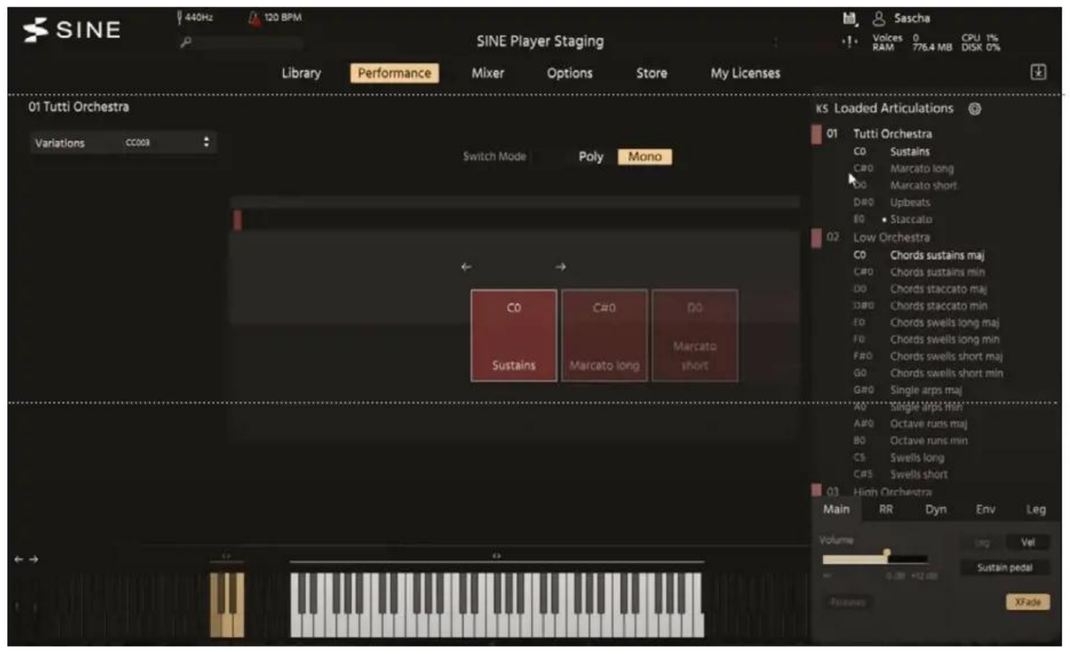
www.spitfireaudio.com

UVI **Orchestral Suite**

Mac/PC £130

With an intuitive interface, UVI's premiere cinematic solution is all about getting first-rate orchestral sounds with a minimum of faff. Spanning 60 high quality instruments, the key-switch system allows for speedy articulation adjustment, while its built-in convolution reverb allows you to situate your virtual orchestra within a range of famous spaces.

www.uvi.net



Orchestral Tools **Metropolis Ark Ø £130**

Long considered cinematic scoring's titans, Orchestral Tools latest addition to their renowned Metropolis Ark range boils down the wide-ranging scope of the multi-part series into one easy-to-control 'prototype orchestra'. Recorded at the Teldex Scoring Stage in Berlin, it's able to concoct cues for film, television and trailer projects with ease.

www.orchestraltools.com

Vienna Symphonic **Smart Orchestra**

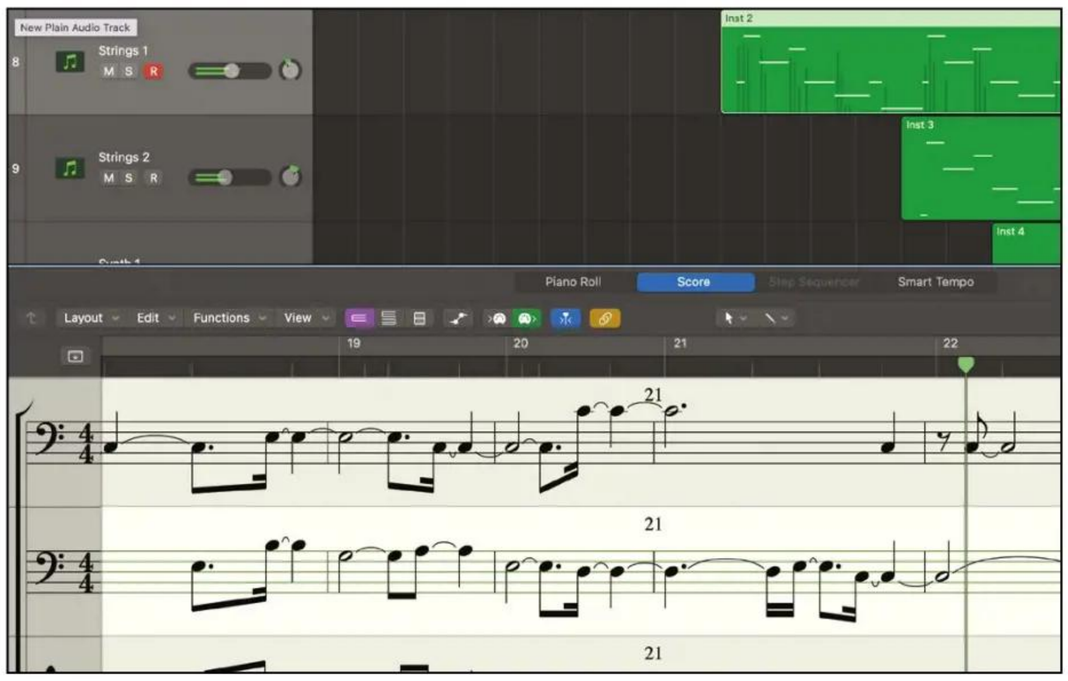
Mac/PC £155

Bringing the immense power of a 140 piece orchestra to software, Vienna's Smart Orchestra also encourages quick sketching of your future emotion-tugging themes. It also cleverly knows how to auto-balance elements of the orchestra itself, while the ability to integrate more experimental FX can steer you into more out-of-this-world directions.

www.vsl.co.at

> Step by step

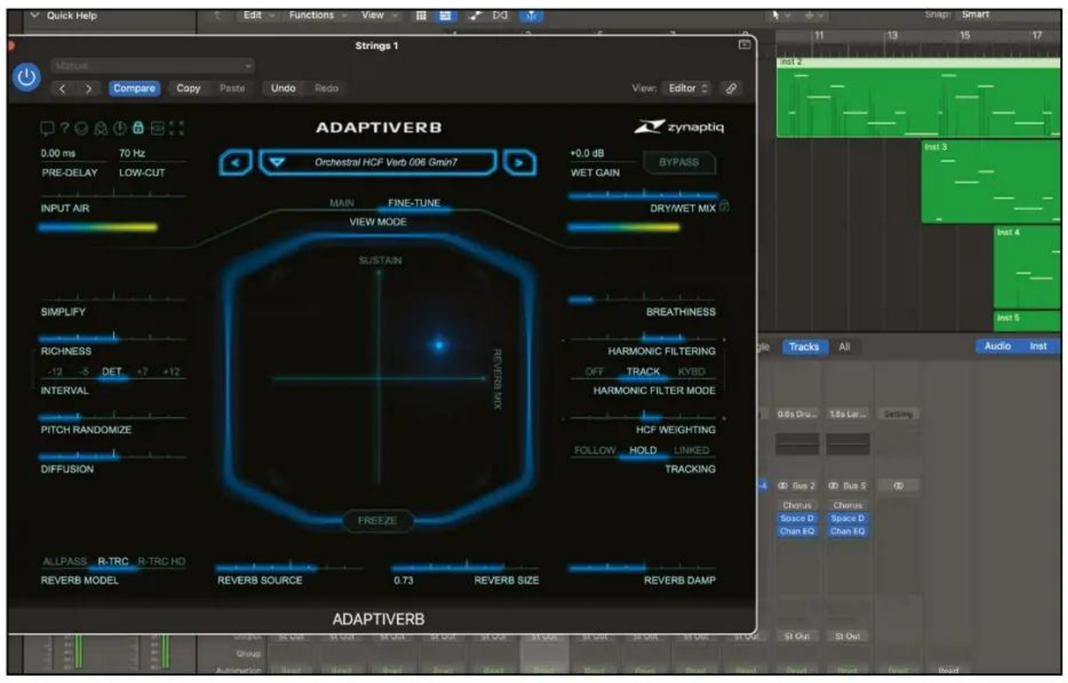
Fitting strings in the mix



1 > Though many orchestral libraries present pre-mixed samples, to make these sampled strings work within the context of a wider mix, it's critical to consider their relationship to competing elements in their frequency space.

2 > While high register strings and low-end instruments need differing processes, it makes sense to eliminate anything below the 80Hz range, boosting the upper-low frequencies between 100 to 150Hz to give higher register strings some weight, and reducing the same frequency range with lower-pitched strings.

3 > If you're mixing a bowed instrument like a violin, you might want to increase the human-factor – the bow sound – which usually sits between 500Hz to 1kHz. Using high-pass filters can eliminate any low-end murk that might be present within high-register instruments.

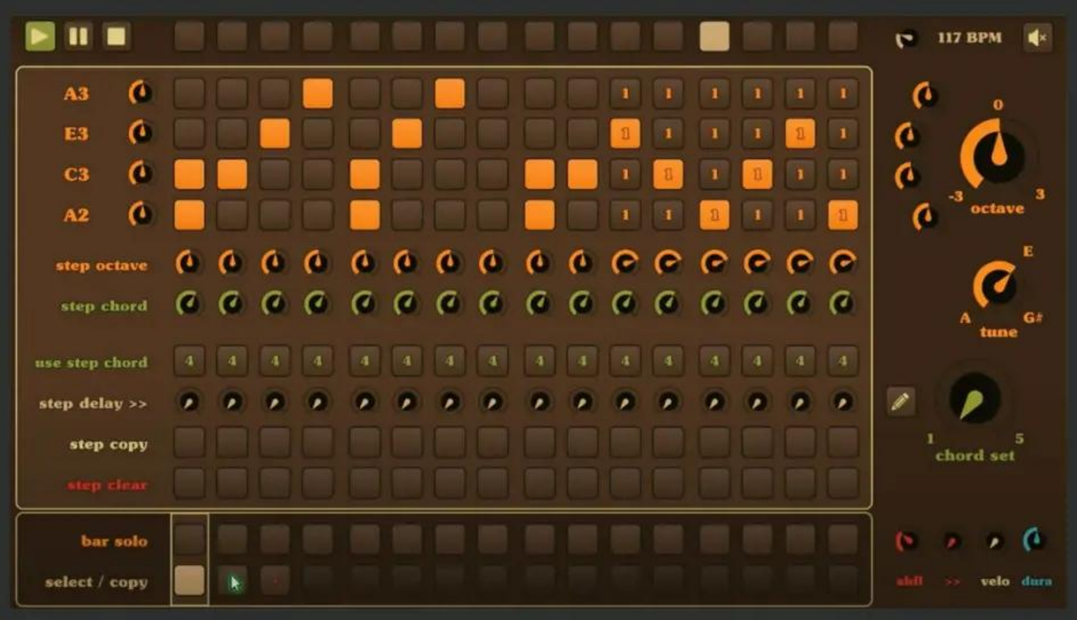


4 > Most top tier orchestral sample libraries are recorded in world-class scoring stages, but if you want to conjure a wider scope, then place it within a long-decaying virtual hall or auditorium-type space. Be sure to not let the tail last too long (five seconds is usually enough) or things can get a bit murky.

5 > You want to keep your attack clear, yet maintain the lingering, enveloping sound of the room to enhance the emotion of the strings. Ramping up the Predelay can help to emphasise the moment when the strings begin, prior to the reverb itself starting up.

6 > A basic rule of thumb when applying equalisation to strings is to make sure you don't go overboard and make them too artificial sounding, use wide Q factors for the more general boosts and narrower Qs for the more forensic cuts.

The CM Plugin Suite's soundtracking toolkit



01 >

In the CM Plugin Suite, you'll find a range of hugely useful additions to your score-idea forming arsenal, first up, there's MonoPlugs B-Step CM, a step sequencer for beats and chords that can be put to use as a sketchpad on a range of musical and rhythmic ideas to underpin your cues.

02 >

When it comes to creative delay, there's a whole host in the Plugin Suite to try. Baby Audio's Baby Comeback allows users to select delays between 0.01 and 2500ms, and is great for building atmospheres.

04 >

Within our repository of synths, the effects-packed wonder of Seaweed Audio Fathom CM provides the ability to carve a variety of lush wavetable, additive FM and VA sounds. Its modular architecture leads to millions of possibilities.

03 >

Getting into the gnarlier domain, Rob Papen's Distort CM is a fantastic way to crunch, distort and widen those Foley elements or DIY samples that you incorporate into your sound design stew. It's also got some versatile modulation controls.

05 >

Perfect for making the kind of high-octane, modern industrial-tinged drum sounds, Thenatan Trax CM sports 20 sublime presets and its deep tone-shaping abilities are matched by its sound-mangling effects.

06 > Trying to make our dry sounds work in a widescreen soundstage can be tricky. That's where an application of Audio Vitamins Life CM can make all the difference, able to widen, sweeten and prepare audio for mixing, it's a must-grab! **cm**

Metering tools in Logic

Mixing might be mostly about using our ears, but there are other senses we can bring in too, specifically our eyes

Logic is full of great features to help view and analyse our tracks and this time we're going to look at how to use some of these during the mix process.

Working in audio, and mixing in particular is mostly about using your ears and training yourself to hear things in a number of different ways. This combination of critical listening and more general objectivity can take some time to master. Nevertheless, there are times when we can and should be using our eyes as well. The most obvious example is level meters. But beyond making sure we don't overload the channel, what information do these convey?

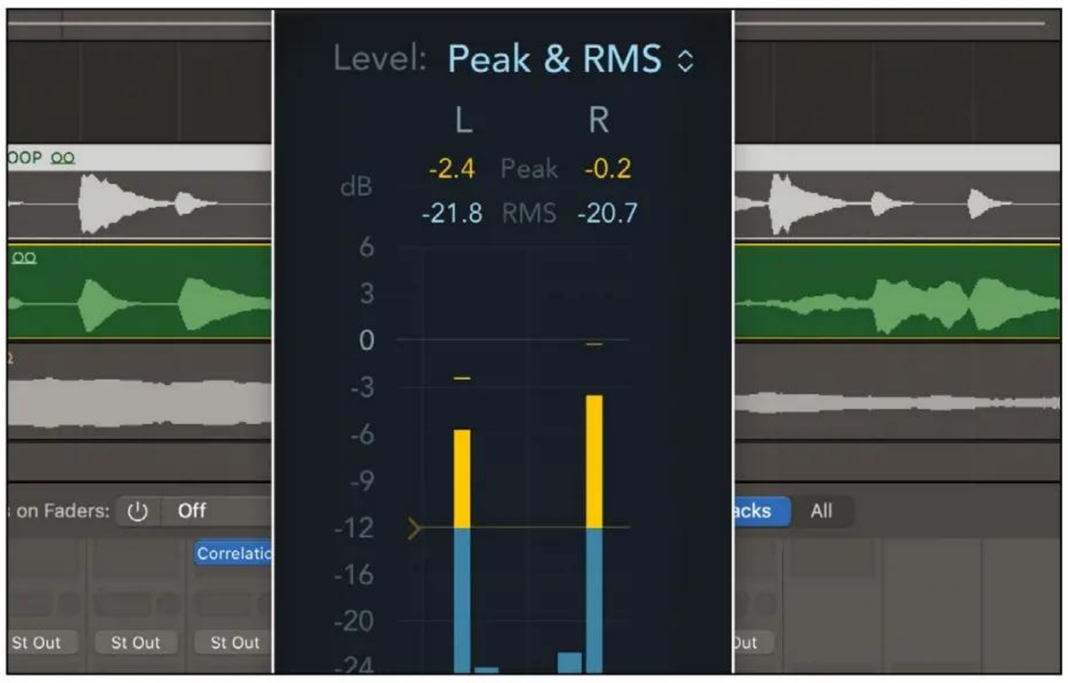
And what about spectrum analysers, correlation meters and everyone's current favourite, the loudness or LUFS meter?

In this masterclass I'm going to focus on the metering and visual tools you can use when mixing, looking at the specific options available, what information they provide and how we can use them to assist our ears. Most DAWs already include a decent set of analysis tools, but if you have the budget there are some awesome third-party options. That said, if you need a freebie, don't overlook the CM Plugin Suite, which includes at least a couple of pretty decent spectrum analysers.

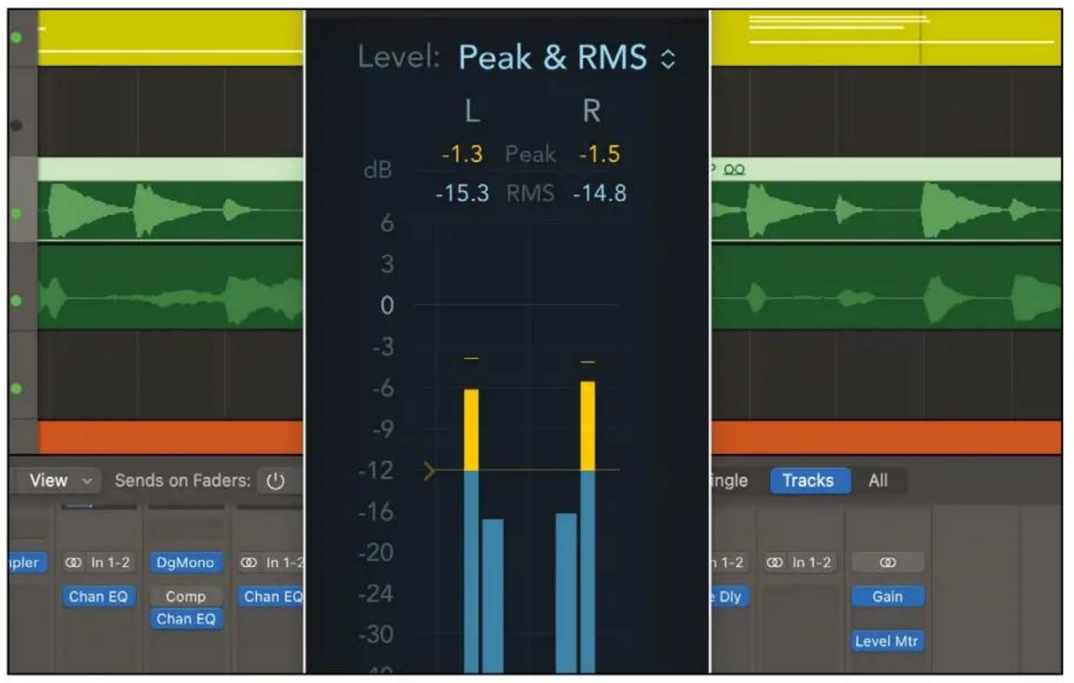
> Step by step 1. Metering tools

1 > Let's start with levels. The main meters you should be looking at are the peak-style meters next to your faders. I'm not going to get into the topic of gain-staging here as this will be covered in a future masterclass. Still, although avoiding overloads is not always necessary in a 32-bit floating system, it is a wise move.

2 > The options for fader-side metering vary across DAWs, but usually include basic peak level metering, so you should have that covered. If you want more detailed level metering such as RMS, VU or LUFS (which I look at in steps 5 and 6), you may have to load a separate plugin or even purchase a third party plugin.



3 > The reason you might want various level indicators is because they show loudness in different ways and achieving perceived loudness is a key aspect of mixing. For example, it's easy to have high peaks but for the mix to sound quiet. RMS (root mean squared) meters can help you judge this as they better indicate perceived loudness.



4 > Here we've loaded up a combined peak and RMS meter on the main mix output. The RMS level will be lower than the peak level, as it is here. What's of interest to us is by how much it's lower and also how much variation there is. Here you can see the RMS value is about -15dB and peak about -1.5dB.

5 > Although our RMS meter is helpful, it's a real-time meter based on average power. To get an even more accurate sense of how loud a track or our mix is, we can use what's called an average or 'integrated' reading on a LUFS (loudness units to full scale) meter, where the scale is based on perceived loudness.

6 > LUFS meters include momentary, short term and integrated level readings as well as some level ranges, all of which can be handy. When mixing, the integrated reading can really help. Here you can see the meter has a Start option at the bottom, allowing us to collect an average level for various parts of the track.

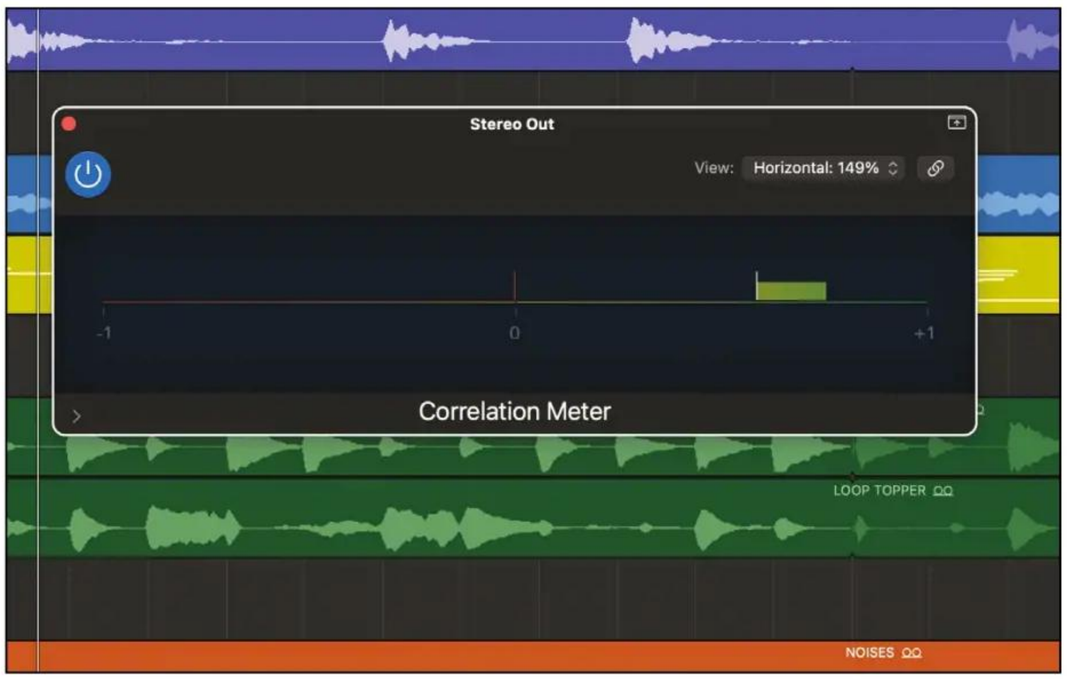
> Step by step 1. Metering tools *(continued)*

7 > Next up, spectrum analysers. These provide a real-time plot of amplitude against frequency and are often incorporated into EQs. They are usually line curves, sometimes have adjustable precision and may also have a zoom option. Other formats include multiband graphs, which you can also see in the grab.

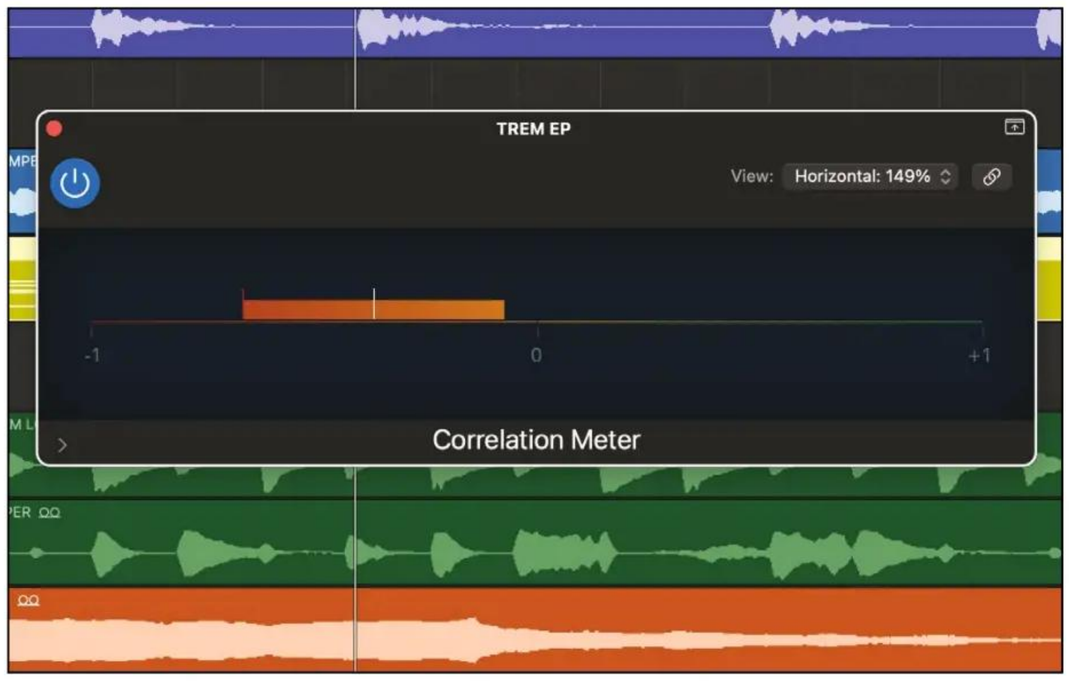
8 > For audible frequencies, the spectrum analyser is a great second line tool. If for example you can hear a prominent and maybe undesirable tone in a sound, a quick look at the analyser can help reveal where the tone is. Here we can hear and see a dominant frequency at about 350Hz, and can then choose a plan of action.

9 > Spectrum analysers can also be ideal for handling frequencies that are harder to hear. This can be great for keeping an eye on low and sub-bass behaviour but also very high frequencies too. Here we have a keyboard sound with an unusual high frequency peak and the analyser helps us see its frequency region.

10 > Next up, looking at this bass sound on the analyser shows there are a lot of low and sub frequencies in the sound. Typically we would handle this using a high-pass filter. Here, using our EQ analyser in post-EQ mode, we can also see the outcome and adjust the filter cutoff and slope to taste.



11 > Finally, correlation meters. These show the phase relationship between left/right stereo channels. A mono mix shows as fully positive (+1 on our example). A fully negative reading occurs if left and right are identical but one is phase inverted. Typically, a mix will meter as positive. However, we may have elements that meter negative.



12 > Some mix elements may have artificial width enhancement that causes this. If when we listen in mono, elements disappear or decrease substantially in level it can be handy to use the correlation meter on those elements to assess by how much the channels are out of phase and how this changes over time, then we can solve it.

PRO TIPS

GONIOMETER

The Lissajous display or audio goniometer is a highly intuitive display that can help you interpret phase, level and to some degree frequency content. Left and right channel levels are plotted such that a hard-panned signal appears as a 45 degree straight line either side of the vertical line. This means a totally mono single on a stereo output will produce a vertical line. Level differences between channels and overall levels dictate the width and overall size of the plot. A full frequency stereo mix results in a fast dynamic display that looks like a ball of string.

Logic X Goniometer

SURROUND METERING

Should you find yourself mixing for multi speaker formats such as Dolby Atmos, the number of channels create new demands for your meters. To put this into some kind of context, each of your outputs will have some kind of correlation relationship with each other. Statistically speaking, that's quite an uplift on stereo where you're only concerned about the correlation between two channels. In practical terms, you're unlikely to experience strong correlation issues across multiple pairs. However, keeping track of things is still important, and making use of surround-equipped metering such as Nugen's Halo Vision could be a wise move.

Nugen's Halo Vision

Sam Smith's performance at the Brits called for a hard-hitting, all-encompassing mix

Gareth Cattermole/Getty

RECOMMENDED LISTENING

SAM SMITH & KIM PETRAS
UNHOLY
If you're aiming for a wide and impactful contemporary mix like this, your metering tools can really help.
bit.ly/sskp_unholy

METALLICA
THE DAY THAT NEVER COMES
Use metering to help improve your mix loudness, then it won't need to be slammed in mastering as heard in this example.
bit.ly/met_tdtnc

KELLY LEE OWENS

Her 2022 album made the UK Top 30 and she's collaborated with the likes of Björk and St. Vincent, but the Wales-born producer insists on keeping her music joyfully chaotic

> Kelly Lee Owens' journey into electronic music started in the strangest of places: the male voice choirs of North Wales.

"I grew up in a working class village in Wales and choirs were part of everyday life," explains Owens. "It's almost like National Service; everybody has to join a choir. People talk about this idea of finding your voice and I think that's what happened when I was listening to those choirs. Hard men, ex-miners in their 40s, 50s, 60s and 70s, singing with so much passion. Music had never hit me like that before. It made me want to explore my own voice. How could I express my emotions with this sound?

"The next step was Kate Bush," she says, laughing. "I was at my Nana's house, going through the books in my uncle's teenage bedroom. I took one out of the bookshelf and there, stuck to his bedroom wall, was an old picture of Kate. I just thought, 'Who is this mythical creature?'. Suddenly, I'd discovered another artist who uses her voice as an instrument. Yes, she sings lyrics, but the way she delivers them turns her voice into something supernatural.

"At the same time, I was playing in a few indie bands and listening to the Top 40, but there didn't seem to be anything that captured the spirit of those choirs."

That all changed after Owens made the move to London and managed to land a job at the now defunct Pure Groove record shop in Smithfield Market.

"By chance, I happened to be working with two guys called Daniel Avery and James Greenwood. They invited me into the studio and that was the first time I'd really listened to what you would call synth music. Up until that point, I'd always thought of synths and electronic music as being very cold and soulless. The exact opposite of those male voice choirs. What I heard was so beautiful. Just a computer and a

copy of Logic creating something that was so full of soul and vivid emotion. This whole new world had opened up in front of me."

With Avery and Greenwood as mentors/engineers, Owens released her debut EP in 2016, *Oleic* – she'd also collaborated with Avery on his acclaimed *Drone Logic* album. The techno touches of *Oleic* were still there on her self-titled 2017 debut album, but things had definitely slowed down by a few bpms. The album's softer synths, stronger melodies and Owens' dreamscape voice, placed it somewhere between the Cocteau Twins and Underworld's gorgeous *8 Ball*.

Collaborations with the likes of Björk and St. Vincent soon followed, not to mention an invite to write the official theme tune to the 2023 FIFA Women's World Cup. No surprise, then, that this year's album, *LP.8*, made the Top 30 in the UK albums sales chart and has been accompanied by a series of festival shows in Europe and Australia.

cm: When that world of electronic music first opened up, what did you start listening to?

KLO: "Obviously, I was listening to quite a lot of techno, thanks to Dan, but I was never a techno supernerd. The strange thing is that I seemed to end up making club music without being much of a clubber. When I was working at Pure Groove in Smithfield Market, we were over the road from Fabric, so we used to get given free tickets. I went there and I had some amazing nights, but I never got obsessed by a particular genre.

"Working with electronic music actually made me go back and reassess some of the music I'd heard in the 90s: Chemical Brothers, Leftfield, Underworld, Prodigy, Aphex Twin; artists who created a different kind of sonic experience. Aphex's *Selected Ambient Works 85-92*, that was a gateway album for me. It took me somewhere else! Oh, and I also need to mention New Order. Working class background, again. And they had a woman, Gillian Gilbert, on keyboards. That was seriously important; to see other women out there on the frontline. Showing us that electronic music wasn't just a boys' club.

"How lucky to have lived through such an amazing period for music. All these bands having number one albums and singles. This was mainstream music and it was fucking brilliant! My God, don't you miss that? Don't you miss hearing something that good in the Top 5?

"Yes, I fully accept that things were different back then. Labels were giving money to artists; you could still get a decent record deal. And if you sold a few copies, you would earn enough to make a living. Samplers and synths were becoming affordable. Musically, it felt like there was a lot of freedom.

"I can only hope that the music I make taps into that same collective vibe. That's maybe where I have a connection with clubs. I understand the importance of the 'moment'. A

"New Order had Gillian Gilbert on keyboards. That was seriously important, showing us that electronic music wasn't just a boys' club"

Gus Stewart/Redferns via Getty

Kit list

HARDWARE

Apple laptop - forever and a day! It's like a portable creative superstore

OTO - Bim, Bam, Boum

Korg Volca Keys

Korg Mono/Poly

Arturia MicroBrute

SOFTWARE

Logic Pro X

Waves Platinum

kick drum or a bassline or a melody that unites 2,000 people on a Saturday night. That's why people go to clubs every week. It's like going to church; a religious experience."

CM: You mentioned Logic, earlier. Is that what you work on?

KLO: "Yes, still with Logic. I'm not sure why. It's probably that whole thing of being the first DAW you work with. For live work, it's Ableton, but always Logic in the studio. I feel comfortable with it. Like I said earlier, I'm not a supernerd, so it took me quite a while to get my head around Logic. But needing a bit of help and guidance at the start is nothing to be ashamed of. Guitarists go to lessons and find stuff on YouTube, so what's the problem with getting a few pointers when you're first starting out with a DAW?

"James Greenwood was exactly what I needed. He kept it all very simple... just Logic, a laptop, an SH-09 and the Dark Time sequencer. Much as I love working on the laptop, there is something about a machine like Dark Time that I find truly inspiring. You can program whatever you want and it doesn't matter if it's correct or not. It's as if analogue is designed to go wrong because you always make mistakes. You press this button or put the kick here instead of here. So much of my stuff has that. I wish you could get plugins to fuck up more than they do. I think we need more of that randomness in music!"

CM: There is something about 16 buttons that still puts a smile on my face. What happens if I just press this one and these two and that one, then this one here and then puts hats here, here and here? Obviously, you can do mouse clicks just as easily...

"I wish you could get plugins to fuck up more than they do. I think we need more of that randomness in music!"

KLO: "But is it as much fun? Can you still create chaos? Will that kick be ridiculously late? Are you interested in making perfect music? I'm not. What does that even mean? Perfect music. What is perfect? A lot of time in the studio seems to be spent reintroducing variation and accident. I suppose you might call it humanness. Nudging things forward, nudging them back, dipping the volumes, trying to keep the listener engaged.

"If the music goes nowhere, people will switch off. OK, I know what this song is doing, I don't need to listen anymore. Analogue keeps things interesting. It rebels against stability."

CM: When it came to writing your own songs, what kind of sound were you after?

KLO:"I was listening to The Knife and Björk's *Vespertine* album. I read somewhere that she spent two years recording micro-beats for that record... just found sounds and natural noises. That definitely impacted on my first album. I had a lot of stuff recorded on the iPhone.

"If you listen to the track, *Bird*, on it, there's the slowed down sound of a bird from a nature documentary, and a higher bird sound playing the hats. On the track, *Arthur*, there's a hailstorm.

"I found that whole process of marrying nature and machines so liberating."

CM: Is it fair to say there was more of a dancefloor theme to the first two albums compared with this year's *LP.8*?

KLO: "Oh, definitely. Those first two albums were my attempt to explore club music. That idea of being in a space with all these other people... moving your body in a certain way.

"For *LP. 8*, I was working with [Norwegian producer] Lasse Marhaug and he is, fundamentally, a noise artist. When we first got in the studio, I was trying to hook up my synths and he said, 'I'm sorry, I don't work with MIDI'. What? How do I use my synths? But it turned out to be such a refreshing way to work. Basically, I spent eight days improvising the songs on that album."

CM: Improvising?

KLO: "Making it up as we went along. We'd usually start with the Pulsar 23, which provided all the beats, recorded straight into the

computer. It's a little semi-modular thing and it's incredible. It's got all the EQ you need right there, so once you've got what you are after, you don't need to do anything else in the computer apart from a bit of arranging.

"I'll be honest, it did feel strange at first. Working so quickly. I'm so used to sitting down at the screen, programming beats, adjusting things just a tiny amount this way or that way. Part of me loves doing it and enjoys getting right down into the minutiae of the rhythm, but part of me fucking hates it! Suddenly, I've got this one box. We get a basic beat, let it run and that's it. Working with Lasse changed my whole perspective.

"Most of the other synth noises on *LP.8* came from the Korg Minilogue. I sat it on my lap, listened to the beats we'd got from the Pulsar, went through the presets and made up stuff as I went along. I like that bass sound, let's try a bassline. Record it. This pad is nice. Record some of that. Then, I'd stand up and start breathing or chanting into the microphone. Record it. Pick up some strange percussion instrument and start smashing the hell out of it. Lasse had an old pump organ in the corner and, for the track, *S.O (2)*, I was just playing random notes. I don't read music and I've never been musically trained, so I was going with anything that sounded OK. Not worrying if that note went with that chord or whatever.

"It was a really freeform way to work. Get something down, then move on to the next song. Like I said, Lasse is a noise artist. The way he works is just 'press record'. After a while, it felt like the songs were flowing out of me.

"Think about it. When you're programming stuff into the computer, you are constantly assessing what it sounds like and whether this note needs to be changed. It's a constant interruption because that's how your brain works. But if you create a piece of music on an instrument and immediately record that, you are taking away your brain's ability to doubt and question what it's doing. Once it's in the computer and you've moved on to the next bit of the song, that's it... no more worrying if you've got the right hat sound. Timewise, it was a mindblower for me."

> "The way Lasse works is just 'press record'. After a while the songs were just flowing out of me"

Are we forgetting how to appreciate music properly?

"So much of today's music business is backward looking. And you can understand why record companies do that. If you've got an established artist who's already sold loads of albums, there's no need to invest in that artist. You can just sit back and watch the money come in.

"But what are the next generation of kids going to listen to? And the one after that? For a business to be successful, there has to be investment. I have to invest in myself. So does anybody reading this interview who wants to make music. And it used to be the record companies' job to invest in the artists that they thought had merit. The first album might not sell well, but the second and third might be massive.

"These days, a lot of artists never even get to release a second album. If you're not getting the required amount of YouTube views and you're not big on TikTok, it's game over. To me, that's the complete opposite of artistry and creativity because you're only giving an artist a very slim chance to make their mark. If you don't do things this way, you're fucked.

"Pre-pandemic, about 80% of my revenue came from merchandise and live work. I was still having to work 45 hours a week in the record shop... to live, to buy food. It's probably changed now because I have got a bit more well known and I've been able to sign a publishing deal, but there are so many artists out there who are struggling.

"I'm not saying there isn't any decent music being made because there is, but it sometimes feels like the world's forgetting how to appreciate art and music. Everything we hear comes through certain channels and that automatically limits what we hear. Where is that going to leave us? Where would it have left all those great, independent-minded artists of the past?

"Try this experiment. Take away all your music. All your records and CDs, all the stuff you listen to on download and streaming. Take all the independent film and TV channels. Take away all the pictures on your walls.

"All you can listen to, all you can watch and all you can hang on the walls has to come via the mainstream. How long do you think you'd last?"

cm: Reverbs... delays?
KLO: "We did have a few bits of semi-digital stuff like the OTO Bim, Bam and Boum. We sort of played with them in the moment, as we were recording, or added little bits – and it wasn't very much at all – later. In so many ways, it goes against everything I've ever done musically. Most of us work that way: here's the basic idea, let's make it better. Unfortunately, human beings tend to doubt themselves, so we get ourselves stuck in this endless cycle of, 'Does this sound better than that? Is that technically correct?'. Maybe it is technically correct, but does it make the song sound any better? All of these questions that you start asking yourself.

"I remember talking to Bobby Gillespie about this and he was saying the same thing. He's not a technically trained musician and, for a long time, he was worried that he didn't have all the stuff you need to be in a band."

cm: He's done alright for himself!
KLO: "Of course, he now knows that's rubbish! What he does have is a deep connection with the music, and that's what I was striving for with this album. It's music that was built more from the heart than the head. I've heard stories of classically trained piano players that can't actually improvise. If you sit them down and say, can you put a piano line over the top of this track, they'll ask for the music. That's crazy! It's almost as if what's been taught out of them is the ability to trust their own ears. To tap into your own ideas and explore what you're interested in.

"When I was a kid, I used to tape the Top 40, then listen back to it in my bedroom... like we all did. But any songs that I liked, I would listen to them over and over, and I would make up my own harmonies and different basslines. I didn't have anything to make those basslines on, but they still kept appearing in my imagination. 'Forget the rules... just make music.'" **cm**

Kelly Lee Owens' album, *LP.8*, is out now

HEAR MORE

From this year's LP.8 *album,* Olga
bit.ly/klo_olga

The brilliant Bird *from her 2017 debut*
bit.ly/klo_bird

kellyleeowens.com
soundcloud.com/kellyleeowens
twitter.com/kellyleeowens
facebook.com/kellyleeowens

Gonzales Photo - Erling Brodersen / Alamy

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Using snap compression to add punch

Compression can be used in many wonderful ways, and in this masterclass, we're looking at a technique that adds punch to sounds

Understanding how a compressor works doesn't really reveal the breadth of outcomes it can achieve, and when you factor in the individual attack and release characteristics of different compressor designs it's easy to see why people develop favourites for certain tasks. Here I'm focusing on one specific effect that requires a fast and flexible compressor.

This technique, sometimes called snap compression, is a technique that fine-tunes the attack and release stages of your compressor to add punch or snap to a sound. It works best for back-beat sounds such as snares and rims, although it isn't necessarily limited to these. What's more, it's an unapologetically audible compression effect where the sound of the compressor is what we're utilising.

When a sound starts with a sharp fast transient, a super fast compressor can actually catch that transient and clamp down its level. With snap compression we actually want to let that transient pass, but only just. The effect does take a bit of tweaking to get right and you'll find some compressors are simply better at it than others. My preference is for a VCA or FET-based design, but we will try some different options in the walkthrough. Right, let's get to it.

> Step by step

1. Using snap compression to add punch to individual sounds

1 > Snap compression is a technique best suited to transient heavy sounds, where you want to make the transient pop a bit more. To that end to get started you should grab some suitable sounds that aren't already heavily processed and need something extra to enhance them. To start we have a raw 909 snare.

2 > This is the sort of sound that can be perfect in its original state, but for some applications can sound a bit weedy. Snap compression can help resolve that. We've loaded up an instance of Logic's compressor, primarily because it gives us easy access to multiple compressor types.

3 > Next, choose any VCA design. This should provide not only flexible attack and release but also adjustable knee shape. If your compressor includes automatic gain make up then switch this out. Then set a medium ratio (we've gone for 5:1), and if you have the option, set the knee shape to hard.

4 > Our attack and release are set to about 15ms and 20ms respectively – switch off auto release if you have it. Now lower the threshold to get some gain reduction. Here we've got about 10dB of reduction and the compression is certainly adding fatness to the sound, but it's not really punchy yet.

5 > To get the snap effect, focus on the attack and release controls. Start by sweeping the attack. You'll hear at its fastest settings the snare attack is hammered down, but as you ease it back the attack is more audible. We've set ours to about 20ms, but you'll find the exact setting depends on the sound and compressor used.

6 > Now focus on the release. At the fastest release times, the decay of the snare dominates, but as we increase the decay time the initial snap of the attack becomes more obvious. For us this sounds pretty good at around 200ms, but once again settings are sound- and compressor-dependent, and faster release times are often ideal.

> Step by step

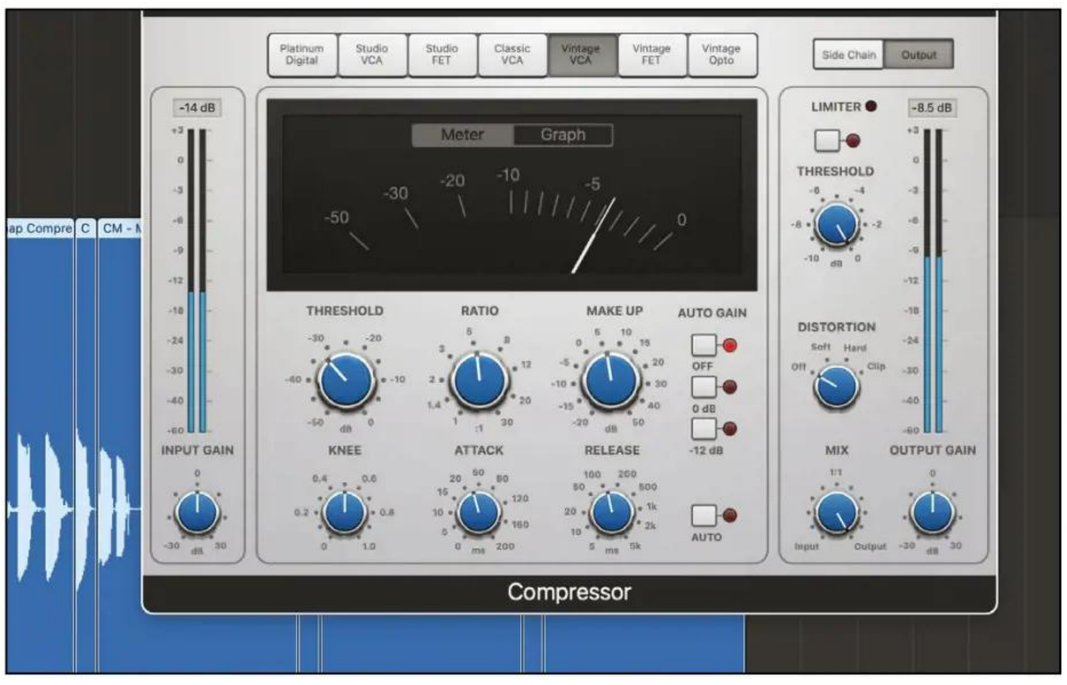
1. Using snap compression to add punch to individual sounds *(continued)*

7 > Let's try some different compressor types. Firstly FET. In this instance the FET design is more responsive. Adjusting the threshold to achieve similar gain reduction, we can then also modify the attack and release accordingly. We've set the attack and release to 20ms and 100ms respectively for a really snappy sound.

8 > Next up, we're trying an opto-style compressor. Here we've had to reduce the threshold considerably to get the right response (at least -40dB), and we've also set the attack and release fast – about 10ms and 50ms respectively. The effect is very fat but lacks the snap of the other two compressors.

9 > Finally, Logic's linear DAW-style compressor. Here, we've set the attack and release to 40ms and 120ms respectively. To recap, each compressor style delivers a different type of punchy sound, providing us with plenty of choice.

10 > Returning to our original VCA compressor, try the same method on a kick drum – we're using an acoustic kick. With a bit of tweaking we can add punch to the kick attack and also curtail the decay slightly – our settings are 20ms attack and 150ms release. For a flavour-filled kick this can be a great treatment.



11 > If we try the technique on a percussive, picked electric guitar sound, again with a bit of tweaking we can enhance the attack. The technique works best on clear, short, predictable sounds, where we can tailor the compressor very carefully and really fine tune the threshold.

12 > Finally, many compressor plugins include a mix control. This provides a convenient way to blend your carefully crafted, audibly compressed sound with the dry signal, using what is essentially parallel compression. Returning to our step 9 backbeat compression, we've used this method to get our desired sound.

PRO TIPS

TRANSIENT SHAPING

Once you get into reshaping sounds using the attack and release characteristics of a compressor, you should also consider, as an alternative, using an enveloper or transient shaper. Clearly, this does not have the same gain reduction profile as a compressor, so the outcome won't be exactly the same. Even so, for sharpening up beats, playing with their decay and generally making your sounds punchy they are an often overlooked tool and in terms of shaping can achieve far more extreme outcomes. With that last thought in mind, it's also easy to overdo the transient shaping, so always make sure to A/B as you go.

SOURCE SOUNDS

Without wishing to state the obvious, if you are mixing a track and have the option to edit or replace a source sound, then that can sometimes be quicker than trying to solve things using processing. As an example, if you're using compression to reshape a snare sound that's from a sampler or ROMpler, and have the option to reshape the sound within those instruments, then that is probably a good starting point. Equally, if you're working with audio and the source sound is really unsuitable, you could replace it or layer it with an additional sound.

Using a transient shaper such as SPL Transient Designer can produce wild outcomes

Sub Focus: master of fattened backbeats

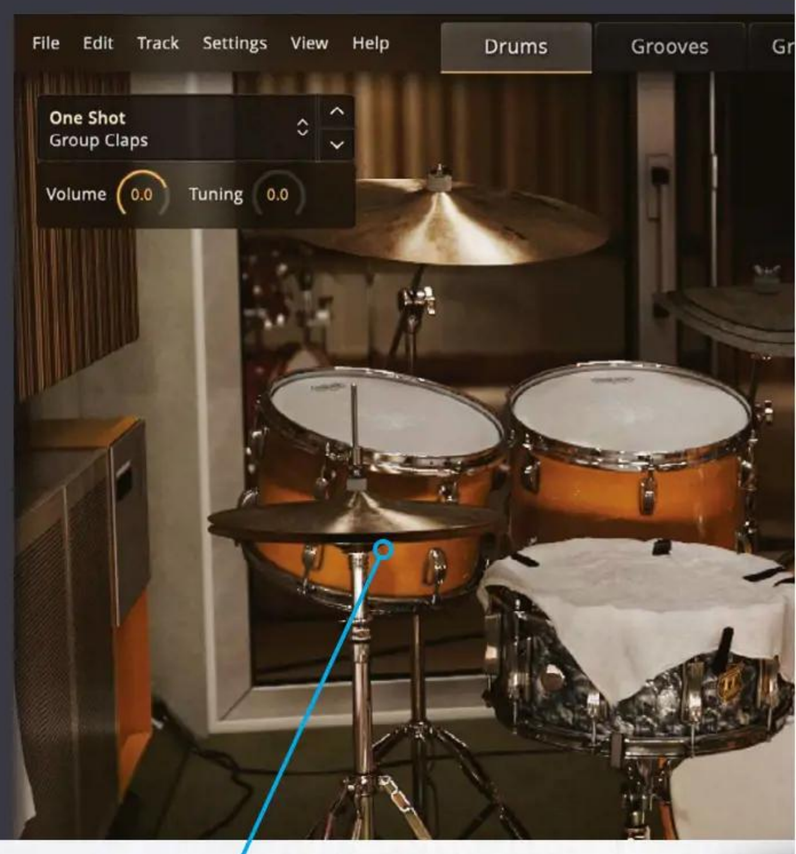
RECOMMENDED LISTENING

SUB FOCUS & DIMENSION
READY TO FLY
Compression can be great for enhancing the fat backbeat on tracks such as this
bit.ly/cm_fly

DRAKE
NICE FOR WHAT
Sometimes an audibly compressed punchy kick drum is just what the track needs
bit.ly/cm_niceforwhat

6 of the best **Instruments**

We've covered synths elsewhere in this special issue but soft instruments are vital too! Here are six that have scored well in our recent reviews

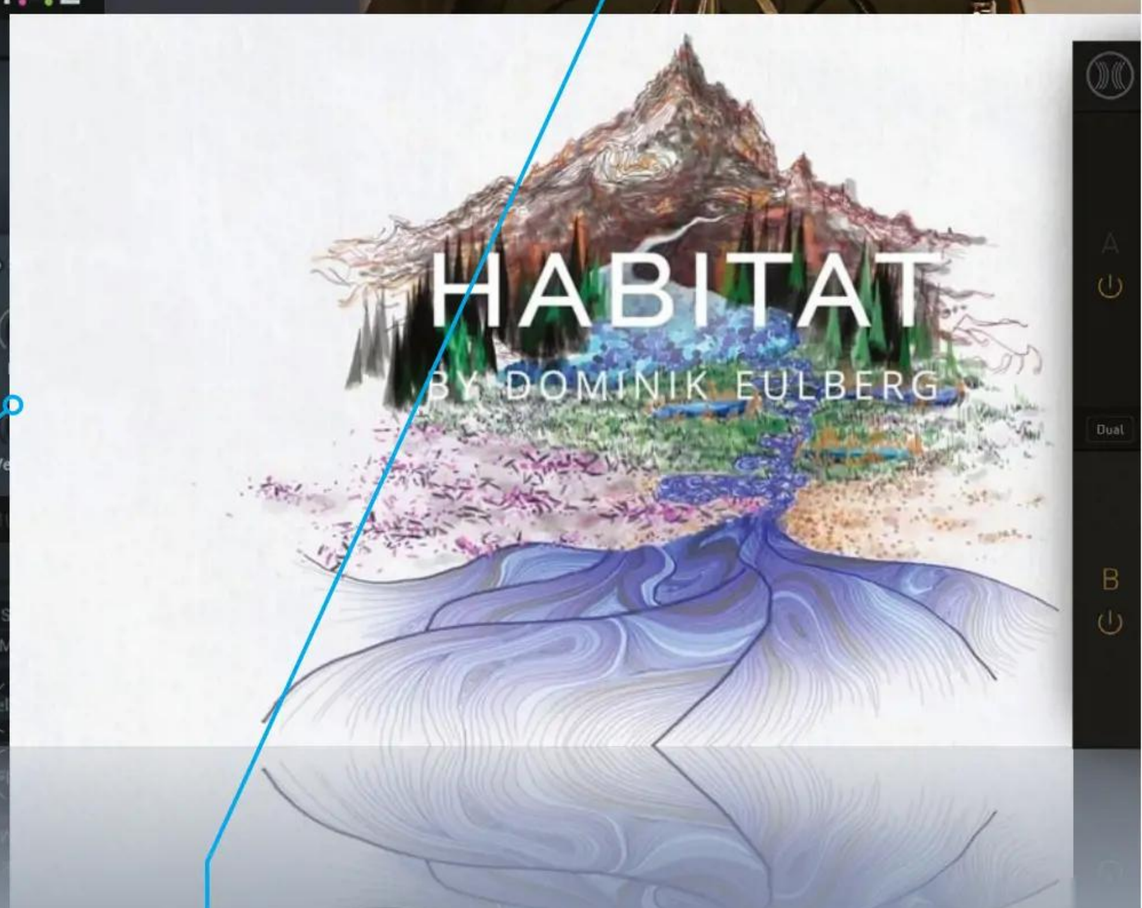


Wave Alchemy **Triaz**

£120 9/10 cm307

Wave Alchemy named Triaz for its triple-layered sound engine, and with 10,000 individual samples and over 600 presets, this is more than the ultimate drum machine. "As a creative workstation, Triaz excels as a competent sound design processor, a peerless polyrhythmic generator and an idea-forming beat-hub."

www.wavealchemy.co.uk



Orchestral Tools **Habitat**

€229 9/10 cm308

Synths, acoustic orchestral instruments and nature, all in one amazing instrument which is a dream collaboration between OT and Dominik Eulberg. "The blend of instrumentation is sublime. If textures and pads are your goal, Habitat is a class leader in sonic diversity and interest."

www.orchestraltools.com

Toontrack **EZdrummer 3**

€165 10/10 cm310

The EZdrummer ecosphere is now at huge proportions, with a vast array of sample expansion and MIDI groove packs. And with this v3 release, the software at its centre is a sizeable update: "EZdrummer has always been the drum suite of choice, and the update to EZD3 merely seals the deal. It is stunningly good!"

www.toontrack.com

UVI
Augmented Orchestra

€299 10/10 cm313

Everything from processed acoustic instruments, through analogue tape, to modelled instruments and synth stacks and textures. It brings "a superb production-ready palette straight to your DAW, and it's ready for action!"

www.uvi.net

Heavyocity
Symphonic Destruction

£325 10/10 cm305

Not a typical string sample library, more of a meticulously crafted chaos machine. "This is aimed squarely at team blockbuster. Its sounds are big, brash and utterly brilliant. It is the ultimate means to wrangle the most epic scores."

www.heavyocity.com

East West
Forbidden Planet

£245 9/10 cm315

We finish this best instruments roundup by going off world to a land of opportunity and adventure... East West's sci-fi library is "a dense star field of malleable textures, synths and ever-shifting drones and FX. All the space-faring sound you could need."

www.soundsonline.com

> make music now / become a synth power user

BECOME A SYNTH POWER USER

We're going to help you master your instruments and become a power user in many aspects of synthesis. So prepare to discover some fantastic softsynths and take your programming to another level...

> The synthesiser is one of the most popular instruments, and there are many software options for you as a Logic user. In this feature we're going to detail the different types and tell you how to use them.

Logic comes with an abundance of software instruments – including many synth options – but that doesn't stop you from looking outside your DAW to see what third-party options could work in your tunes.

So here we'll detail the most popular subtractive synths on the market. After that we look at some of the best non subtractive synths before revealing our favourite free options. We'll even tell you how to use them with three tutorials that detail how you can create some of the most iconic synth sounds ever!

6 of the best paid-for subtractive synths

Want subtractive softsynths that are a cut above? Here's our checklist of some of the best paid must-haves

Cherry Audio **Miniverse**

Mac/PC $220

It's often said that everybody should have a Minimoog, and while the original or reproduction hardware still changes hands for thousands of pounds, you can own a Mini for about 1% of the price in software. Cherry Audio's Miniverse is production ready, and even offers a Polyphonic mode.

https://cherryaudio.com

Arturia **SCS-80V**

Mac/PC €199

Now in its Mk4 incarnation, this software recreation of an analogue heavyweight is one of the best of its class, from Arturia. The CS-80 has a very distinctive sound, which Arturia have managed to capture brilliantly, while providing all the controls you could need to get creative.

www.arturia.com

Roland **Juno-60**

Mac/PC $149 (Roland Cloud subscription)

The original Junos were never the most complex subtractive synths, but they were the perfect machines for getting your chops together. Not only is this emulation exemplary in sound, but it adds some welcome additions to the original for über contemporary results.

www.rolandcloud.com

u-he **Diva**

Mac/PC **€179**

In something of a nod to analogue synthesisers, Diva is a flexible and hard-working synth plugin, with a distinctive analogue sound. It is packed full of great presets which are fully production ready, and therefore you could be creating your own sounds from the subtractive powerhouse in minutes.

https://u-he.com

G-force Software **Oberheim OB-E**

Mac/PC **£149.99**

The OB-E is something of a Goliath. Based upon the legendary Oberheim 8-voice synthesiser, this software is an exceptionally beautiful reimagining of the original, and considerably easier to use, thanks to its software control. It's not cheap but it sounds very expensive!

https://gforcesoftware.com

UVI **Vintage Vault 4**

Mac/PC/iOS **€599**

This epic collection of vintage synthesisers includes a vast array of subtractive devices, along with a large number of digitally-based and non-subtractive classics. While the collection consists of sampled and reimagined instruments, there is a large amount of control for each device from within UVI's own Workstation plugin.

www.uvi.net

6 of the best paid-for non-subtractive synths sounds

Want to take your synthesist's knowledge to the next level? Try these paid synths which gravitate away from the subtractive norms towards extreme processing

Xfer Records **Serum**

Mac/PC $189

A plugin that has become something of an industry standard for more commercial and dance-orientated work, Serum is a classy performer with a number of sonic options. It's billed as a wavetable synthesiser, but its pallet goes far deeper.

www.xferrecords.com

Arturia **Pigments 3**

Mac/PC $199

Pigments 3 has really come of age, providing a multi-faceted approach to creating sound in synthesis. Its layering possibilities are substantial, providing plenty of wavetable content to get you started. Its sonic potential is vast, from the subtle to the exaggerated.

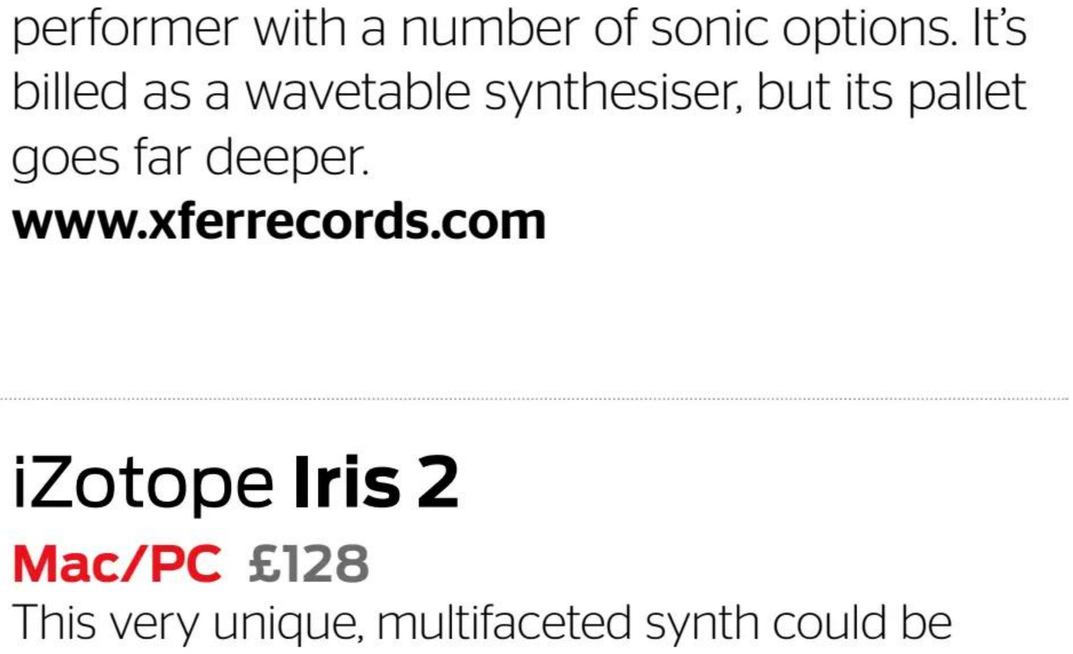
www.arturia.com

iZotope **Iris 2**

Mac/PC £128

This very unique, multifaceted synth could be regarded as one of the most complex sample manipulation packages on the market. It includes an extraordinary amount of control over sample reproduction and infinite sonic possibilities. It's also packed full of useful sampled content.

www.izotope.com



Native Instruments **Massive X**

Mac/PC £179

The update to the immensely popular Massive provides improvements and enhancements across the entire plugin. From the oscillators to the comprehensive routing options, it sounds as huge as the name suggests, and is a sizeable upgrade to the original.

www.native-instruments.com

u-he **Zebra2**

Mac/PC €199

Zebra 2 is another industry workhorse with a vast choice of oscillators up front and a colossal number of modulation options. It's also packed full of presets to get you going, but digging deep with this plugin will reward you with some exceptional sonic interest.

https:/u-he.com

Spectrasonics **Omnisphere 2**

Mac/PC £316

It would be easier to list the synthesis options which are not available in Omnisphere 2. It is by no means the cheapest plugin on the market, but it is one of the most comprehensive. Packed full of outstanding samples which are industry-leading, it is held in the highest regard for very good reason.

www.spectrasonics.net

6 of the best free synths

There's an abundant supply of free alternatives, across all styles of synthesis. Here are six of our free prize-picks

u-he **Zebra CM**

Mac/PC

Kicking off our list, we have to give praise to our very own ZebraCM. It's packed full of flexible operation, from its oscillators to its many filter types. With numerous modulation routings, ZebraCM can sound considered or absolutely huge.

https:/u-he.com

Cherry Audio **Surrealistic MG-1 Plus**

Mac/PC

Based on a Moog design, which was bizarrely sold throughout the world in branches of Radio Shack/Tandy, this relatively basic subtractive synth is something of a class act. Beautifully characterful filtering, coupled with an easy-to-use layout, makes it a perfect entreé to synthesis.

https://cherryaudio.com

DiscoDSP **OB-Xd**

Mac/PC

Making no bones about it, this classic little synth is crafted to both look and sound like a legendary Oberheim. It's arguably at the less adventurous end of synthesis, being firmly subtractive in design, but it's something of a stalwart for its sound, and great when you just want a good polysynth.

www.discodsp.com

Digital Suburban **Dexed**

Mac/PC

This freebie is very much inspired by the Yamaha FM generation with a slant towards the infamous DX-7. Unlike the DX-7, Dexed is littered with a vast number of parameter controls. FM has never been so easy to use, (and so free!)

www.kvraudio.com

Newfangled Audio **Pendulate**

Mac/PC

Flying the flag for the monosynth, Pendulate draws plenty of inspiration from the West Coast synth pioneers. This can make it slightly chaotic to use but by Newfangled's own interpretation, that is entirely the point. Dive in, have a noodle, and see what comes out.

www.newfangledaudio.com

TAL-**NoiseMaker**

Mac/PC

Fulfilling that perfect space for a basic subtractive synthesiser, NoiseMaker presents classic synthesis in an easy-to-use format, which is as easy to edit as it is on the ear. If you think its appearance reminds you of something, the sound of its virtual chorus circuit may just provide that inspiration you have been looking for. Juno what we mean?

www.tal-software.com

ZebraCM filtering harmonics

One of the most identifiable electronic sounds around is created by resonating harmonics using a filter

> Step by step

1. Create a simplified hypnotic sequence inspired by Daniel Avery's *Drone Logic*

1 > For this mini tutorial we'll use the ZebraCM plugin. Load a copy in your DAW, then click the display at the top, which doubles as a menu. Select Init from the bottom of the menu, then move to the master volume, located on the bottom right, placing it at the 12 o'clock position, which should display a value of 50 in the upper display.

2 > We need to ensure that we have plenty of harmonic content to work with. Therefore, we'll leave Osc1 set to its default Sawtooth waveform. Sawtooths contain all the harmonics from the series, meaning that they're bright and loud. To keep things simple, we will just be working with a single oscillator, so ignore Osc2.

3 > This patch is all about the filter! Select the filter called LP Xcite from the filter section drop-down menu. Then adjust the Cutoff pot to a value of 79, followed by the Resonance pot, to a value of 85.

4 > Staying within the filter section, move to the assignable pot, just below the Resonance control, and change its modulation source to LFO1. Then set the value of this pot to 11. By doing this, we're telling the LFO section to modulate the Cutoff control, within the filter section.

5 > Moving to the LFO section itself, ensure that you're looking at LFO1; it should be highlighted in turquoise. Set the LFO Waveform to User. Then adjust the number Points to a value of 4. You should immediately see this alteration take effect, within the LFO area above.

6 > Finally, we need to adjust each step; change Step 1 to a value of 80, step 2 to 60, step 3 to 0, and finally step 4 to -50. If you now play the note E relatively low on your keyboard, you should hear a little harmonic sequence. Experiment by changing the step values, to pick out different harmonics, and effectively create a different tune or riff.

Wavetable *a la* Thomas Dolby on Retro Synth

Wavetable synthesis is an excellent medium for creating sound with movement

> Step by step

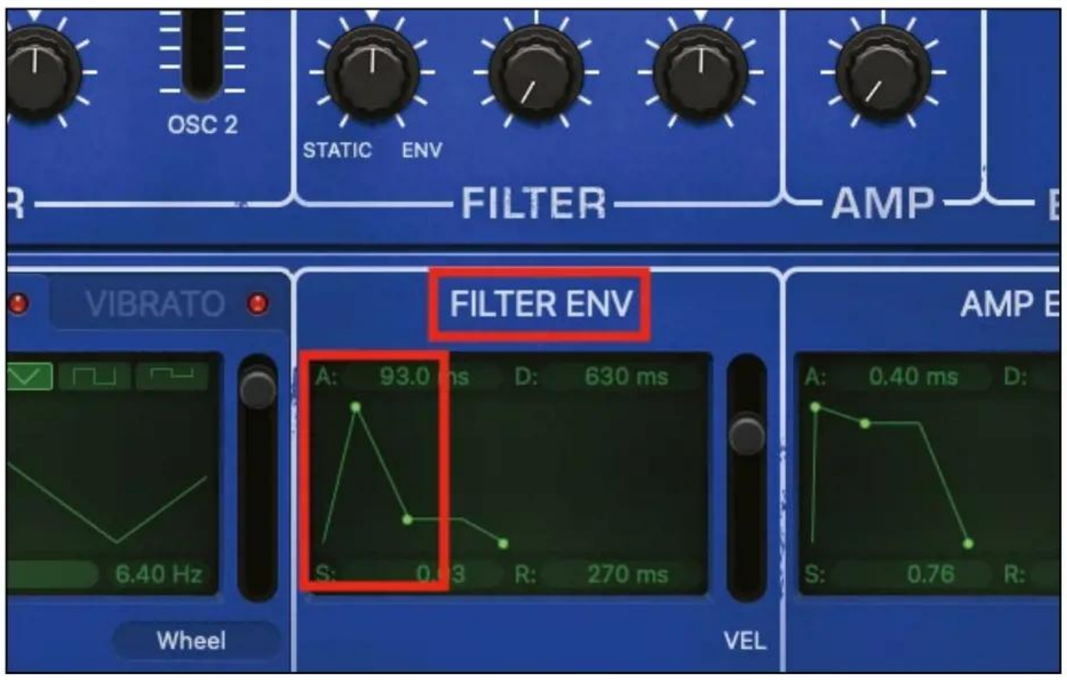
2. Mimicking the wavetable movement of *Windpower* by Thomas Dolby

1 > We are using the Retro Synth, which forms part of the Logic Pro package, but the process will be the same on other wavetable plugins. If you're using Retro Synth along with us, be sure to switch to Wavetable mode, by clicking the Table legend.

2 > Selecting a suitable Wavetable is essential; we'll need something which has variety in harmonic colour as we scan across it. All Wavetable synths will have included wavetables to explore. We're going to use the Digi-Insect wavetable, which we choose from the menu. We can scan across the wavetable using the Shape 1 pot.

3 > You may need to adjust the start point of the wavetable. We're going to position our shape 1 pot as shown, so enter the wavetable at a specific point. Adjust the Mix fader so that we are only hearing Oscillator 1.

4 > To generate the scanning movement automatically, we'll use the filter envelope. We must set this routing in the oscillator section by adjusting the modulation pot in the direction of the filter envelope. The greater the turn of the pot, the more extreme the scanning modulation.



5 > Now let's make some adjustments to the filter envelope itself. The amount of time taken to scan across the wavetable is dictated by the attack and decay phases of the envelope. You may need to address these phases to suit your track, but start with values of around 100ms.

6 > Finally, adjust the filter to suit your sound. As we have a low pass filter currently selected, we'd advise opening the filter up to reveal the wavetable in all its glory. You may obviously choose a different filter setting, to suit the production of your track.

ZebraCM subtractive – punchy filter bass

Some sounds are exceptionally useful, and one is a straight subtractive bass sound with a sub oscillator

> Step by step

3. Basic bass patch in the style of classic bass synths like the Minimoog or SH-101

1 > Load ZebraCM into a spare channel within your DAW, then click on the display at the top, which doubles as a menu. Select Init from the bottom of the menu, to initialise the patch, then move to the Master volume, located on the bottom right, placing it at a 12 o'clock position, which should display a value of 50 in the upper display.

2 > Moving to the oscillator section, we'll leave Osc1 set to a Sawtooth, which is its default, but we want to change the Osc2 waveform to a Square wave. Click on the waveform, and drag it up until you see a Square wave, which should also read 2.00 in the upper display.

3 > We'll use Osc2 as a sub-oscillator; first, increase the volume of Osc2 to a value of 40. We don't want it to overpower Osc1! Then alter the tuning control, dropping it to a value of -12. This relates to semitones, so should now sound one whole octave lower.

4 > Now it's time to make some adjustments to the filter section. Select the filter which is called LP Xcite from the filter drop-down menu. It should give us a nice contemporary sound. Then alter the Cutoff pot value to 60, and the Resonance value to 20.

5 > We also want to send some modulation in the direction of the filter. Using the user-assigned pot, which is currently selected as Env2, set the pot value to 35. This dictates the amount of modulation needed.

6 > Finally, we need to make some subtle adjustments to the Envelope 2 settings. These will control the filter modulation, so can be altered to taste. Leave the Attack pot set to 0, set the Decay pot to 35, Sustain to 0, and finally set the Release pot to 17. It's the Decay pot that alters the speed of the 'bite', so alter to suit your production. **cm**

THE PRODUCER'S GUIDE TO MUSIC THEORY

FUTURE

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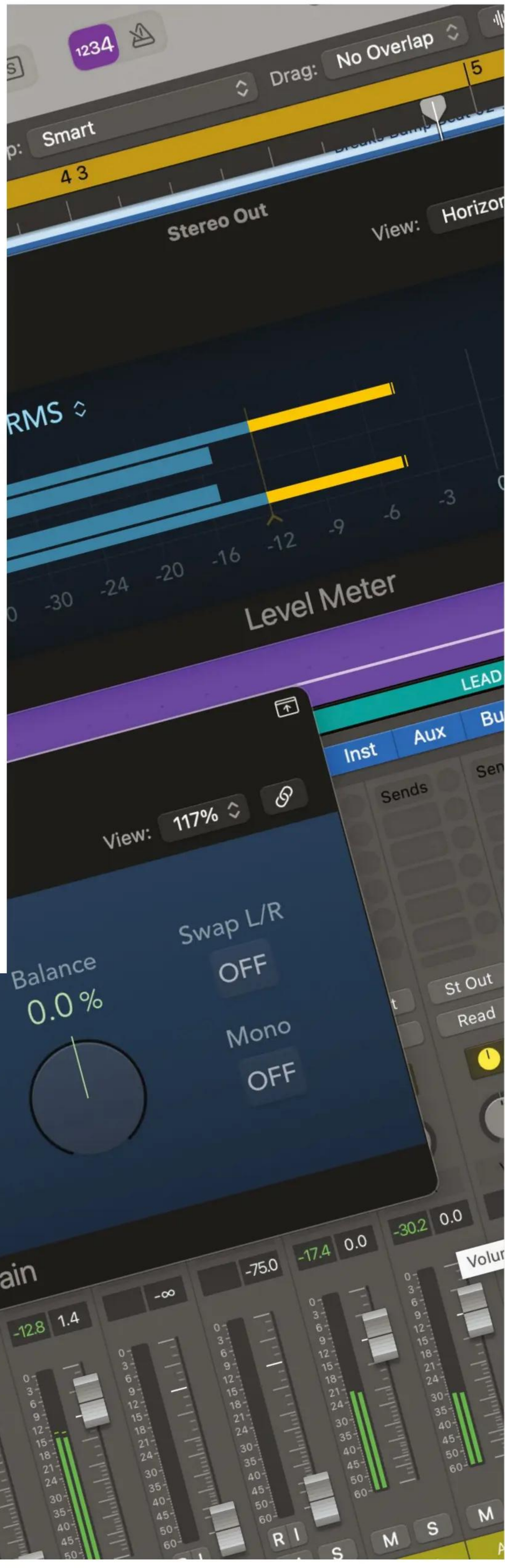
Gain staging

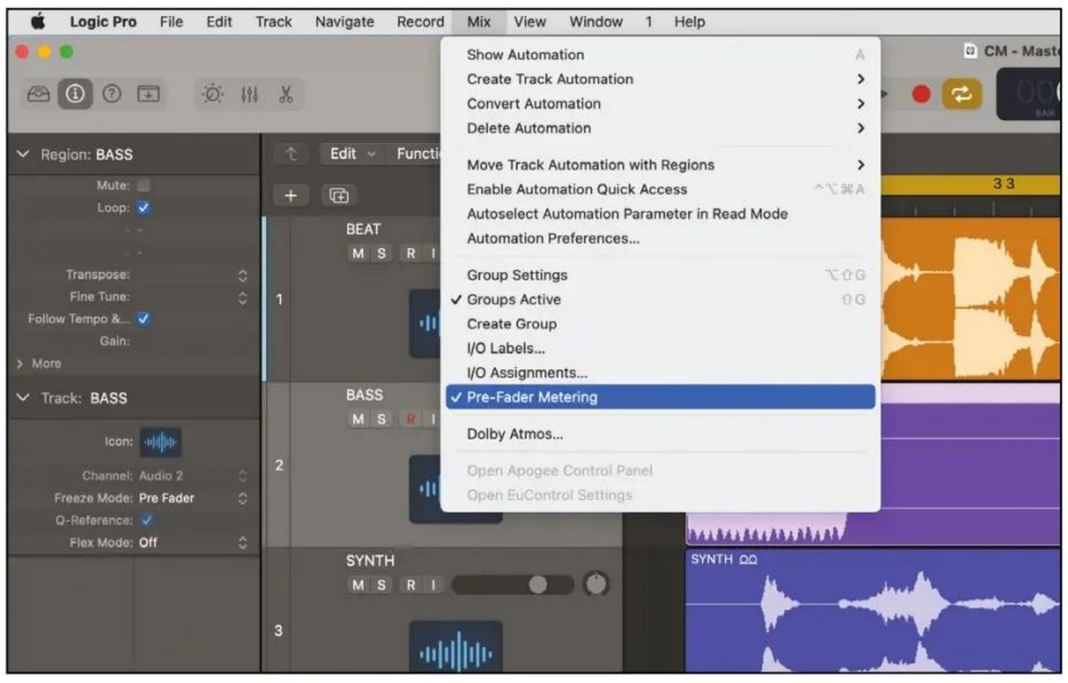
Being in control of your levels is a vital aspect of mixing, but how should we approach this when mixing in the box?

If you want to be certain that your DAW and plugins are processing the way they should be, then you need some control and understanding of signal levels. We often refer to this overall concept as gain staging.

The term originated in the analogue realm and refers to setting your gain in order to maximise the signal to noise ratio. The idea is you keep your signals loud enough throughout the signal path so that the system noise is less significant, but also not so loud that they lead to distortion. This is still an important concept when setting the preamp gain on your interface to record signals into Logic. However, once your signals are inside your DAW and you're mixing, there's no analogue noise floor to worry about. But what about signal level? In theory (check out the Pro Tip), the 32-bit floating point audio used by modern DAWs delivers massive dynamic range. However, making use of this in a plugin-rich session, and bearing in mind we still need to end up below zero full scale at the output, is less clear-cut. For example, many plugins use internal level thresholds for processing, and this is particularly true for analogue emulations. In this masterclass we'll look at various techniques we can use to stay in control of levels, hopefully leaving you free to focus on the important task of balancing your mix. Right, let's get to it.



> Step by step 1. Mixing level management



1 > With any technique involving levels it's important to know what your level meters are actually indicating. Here we've selected Pre-Fader Metering so we can see the level after any plugin inserts, and ensure our fader side meters aren't influenced by the fader level.

2 > If you have a simple session with a handful of tracks then you may be able to balance them to taste without the master output overloading. However, if those tracks contain normalised audio (see grab) then you immediately need to turn things down. Here we have loops on four tracks and already the master is close to +9dB overload.

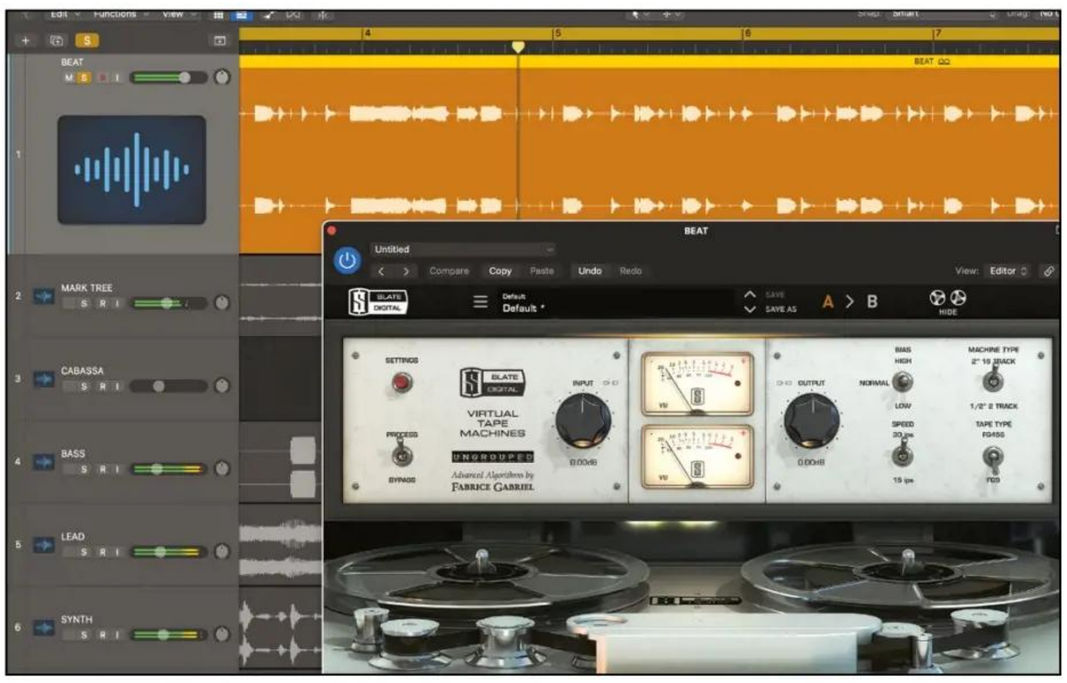
3 > Of course, the simple solution is to turn the faders down. However, what you'll find is that the faders have better precision at or around the 0dB point. So yes, turning down the faders works but once you have lots of tracks you'll find yourself trying to balance your mix using a less precise section of the fader travel.

4 > So what happens if we then add plugin inserts? To demonstrate, we've added a stock compressor to the beats track and set the threshold to its maximum (0dB). The compressor is still applying gain reduction because the audio signal is so high. If this happens across many tracks our problems will multiply and already levels are causing us potentially undesirable outcomes.

5 > This level problem is pre-fader, so turning the fader down won't help. If we now use an analogue emulation instead, then that plugin will probably have an operating level. Here, our tape emulation even lets us adjust it. By moving the calibration slider we're changing how much processing the plugin does for a given level.

6 > Obviously we can adjust plugins individually and where available use their calibrations or input trims accordingly. However, this isn't the only option. A basic volume plugin inserted as the first track insert is a simple universal solution. What's more you can adjust in both directions, cutting or boosting as required.

> Step by step 1. Mixing level management *(continued)*



7 > We've drastically reduced the level of our normalised loop. Equally, for virtual instrument tracks you could simply reduce the overall output level of the instrument. All three solutions are 'at source', leaving you better placed to manage the levels within your plugin inserts.

8 > Unfortunately there's no operating level standard for plugins, and developer recommendations vary from about -10dBFS to about -20dBFS. It's important to do some homework and check the suggested levels. Using the gain options above, adjust your track sources accordingly, and if the plugins have no meters use your fader side meters so that peak levels match the suggested levels.

9 > Roll out this technique across all your tracks. Also, if you have multiple level sensitive plugins in series, be mindful of their relative levels. Adjust the output level on the previous plugin in the chain to hit the required input level for the next. If you have no plugin output level (admittedly this is rare), insert another gain plugin between the two.

10 > Using this technique should achieve reliable operating levels across your plugins. However, if your mix has many tracks you may find as your mix progresses you still end up with an overloaded master output. One solution is to add identical gain cutting plugins to all tracks, or if available, group all faders to a VCA and turn that down.

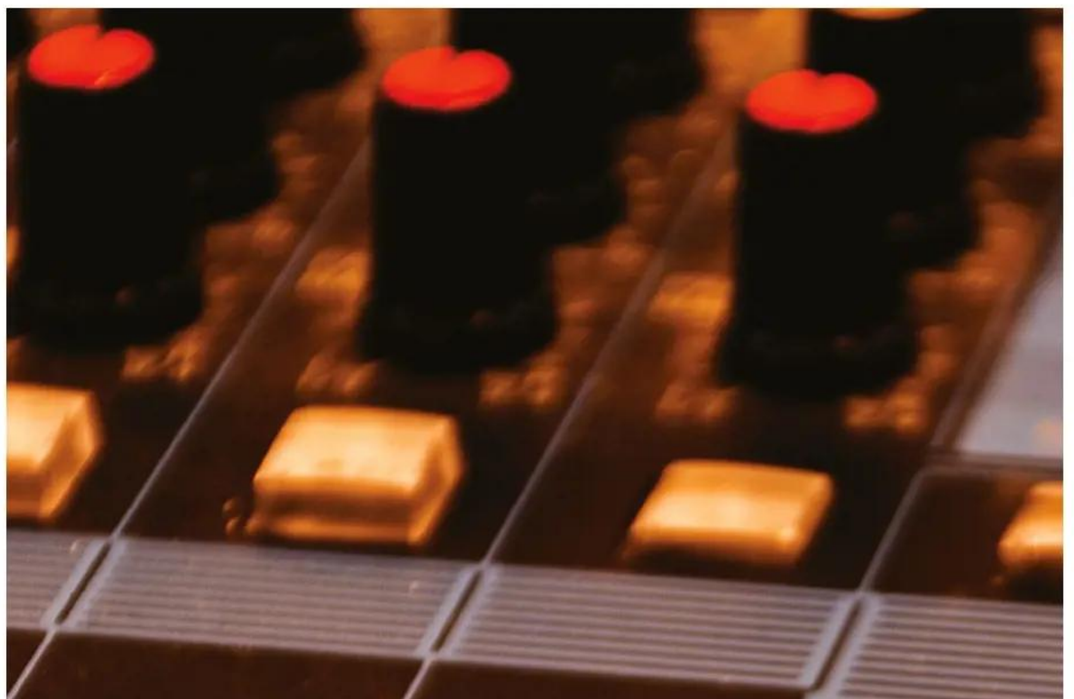
11 > In both cases, be mindful of your auxiliaries or sub groups, particularly if they include level dependent processing. This can get quite fiddly, but one example would be on a bussed subgroup. Here, if you add an additional gain stage, you only need to add a plugin on the bus, not on the channels sending to it.

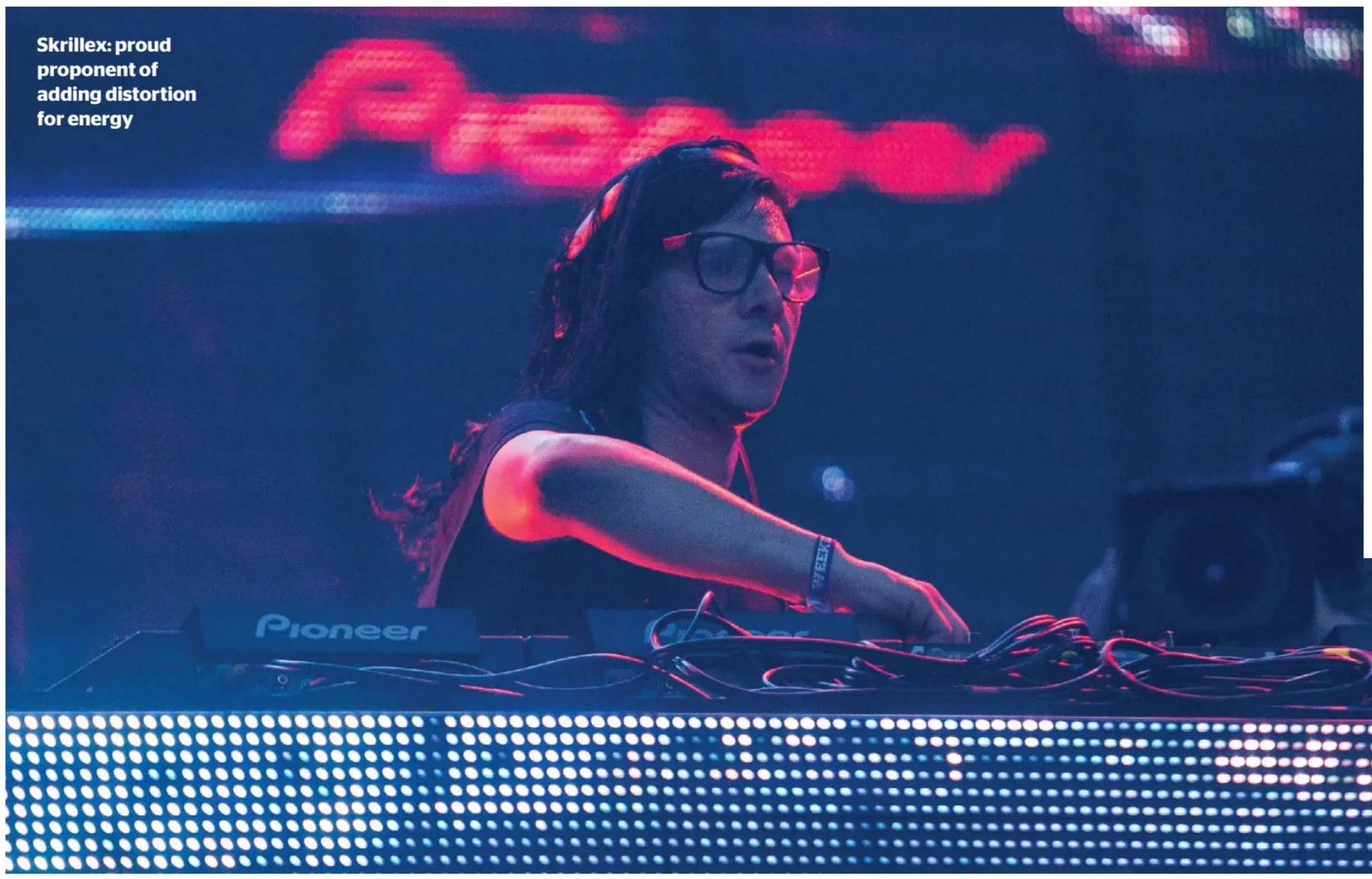
12 > Finally, use a gain plugin in the master output chain. If your track faders are already a bit hot, a gain cut as first insert on the master output provides a quick fix and can help set up levels for further master output plugins, which may of course include level-sensitive analogue emulations.

PRO TIPS

TESTING THE THEORY

If you have experience with analogue mixing or fixed-point audio DAWs such as older Pro Tools systems, then the idea that you can overload channel levels and it not have any effect on the audio may seem very odd, or unbelievable, even. If you need convincing, why not test the theory. The best way to do this is use a completely fresh DAW session with no plugins. On a regular track, load up a tone generator plugin or sound source that can play a sine wave. Also add some gain plugins to the same track so you can excessively boost the channel level. On the master output load up an analyser (an oscilloscope is best) and turn the master fader right down. Now, gradually add gain using the gain plugins. The channel meters should look overloaded but you'll see a clean sine wave on the master output oscilloscope. Carefully turn up the master fader and you'll soon get output clipping, but the signal prior to this in the master bus will still be fine. In our tests using Logic Pro, it took an overload of a whopping 100dB to finally get internal channel clipping, but remember this is without level-sensitive plugins.





Skrillex: proud proponent of adding distortion for energy

Josh Brasted/FilmMagic/ Getty

RECOMMENDED LISTENING

SKRILLEX
RAGGA BOMB
Distortion can enhance track energy, and with good gain structure you can add it to taste rather than by mistake
bit.ly/cm_ragga

GREEN DAY
BOULEVARD OF BROKEN DREAMS
Focus on good mix level management, leaving the loudness related distortion to mastering, where it can be revisited if necessary
bit.ly/cm_boulevard

6 of the best **Softsynths**

We've rounded up some classic synth plugins from p100. Now it's time to look at some recently reviewed softsynths. Here are six that scored well...

Cherry Audio **GX-80**

€59 **10/10 cm317**

We're only allowing one synth per developer in this roundup, otherwise CA may well have cleared up. But this is possibly their finest as it emulates the greatest synth ever: the Yamaha CS-80! "They've elaborated upon the original, and created the most impressive visual and sonic spectacle available in software."

www.cherryaudio.com

Roland **Jupiter-4**

$199 **9/10 cm313**

The Roland Cloud/ standalone Jupiter-4 emulates a classic synth that is far more than 'just' a half-pint Jupiter-8. "This is a reincarnation of a true Roland classic, with an appealing ease of use that will reward extensively through its sonic return."

www.roland.com

GForce **Oddity 3**

£119.99 **10/10 cm317**

Very probably the best emulation of possibly the greatest synth, the ARP Odyssey, gets a v3 makeover and it's a cracker. "We love this software emulation more than any other softsynth; it's a fantastic update and classic synth in its own right."

www.gforcesoftware.com

BLEASS
Megalit

€99 9/10 cm316

Megalit is only one of two non classic synth emulations here but shows how impressive softsynths can be when let loose from the usual classic architecture. “A super-versatile synthesis engine wrapped in an ultra-intuitive GUI, You may just have found yourself a new favourite synth.”

www.bleass.com

Moog
Animoog Z

$19.99 10/10 cm306

Like other Moog iOS apps, Animoog now runs on macOS too, but unlike all the other synths here, this is a new synth and not a classic emulation, and all the better for that. “A really impressive, tactile and sonically interesting synthesiser, which would be worth the money at five times the price.”

www.moogmusic.com

Softube
Model 82

€99 10/10 cm312

Softube’s ‘Model’ range of emulations recreates a famous synth from the year indicated by the name (so 1982 in this case). This is one of the best SH-101 emulations out there, simple as that. “Softube’s production-ready software recreation succeeds in both sound and ease of use. It’s a future classic”.

www.softube.com

L-R: Andy Fletcher (now sadly passed), Dave Gahan and Martin Gore

Vittorio Zunino Celotto/Getty Images

Create classic Depeche Mode sounds

To celebrate the latest Depeche Mode album, *Memento Mori*, we're taking a look back at some of the band's classic sounds and sequences: from *See You* to, yes, *The Last Of Us*!

With Depeche Mode's 15th studio album, *Memento Mori*, out this year, we've decided to look back at the band's synth history and have a go at recreating some Mode-like beats, riffs and sequences. We'll not only wrestle some sounds from our trusty Zebra CM free synth, which you can download right now, but also use an emulation of Depeche Mode's most widely used synth.

When the band first got together back in 1980, they used cheap analogue synths of the time, including a Kawai 100F, Yamaha CS5 and Moog Prodigy. However, the one synth that has been used more than any other, and across most Depeche albums, is the ARP 2600. This was Mute Records owner Daniel Miller's (and once owned by Elton John, synth fact fans). It was not only used for synth sounds and sequences from debut album *Speak & Spell* onwards, but also for creating drum sounds, specifically the kick.

In this tutorial we'll also look at how you can use an ARP emulation like the ARP 2600 V from Arturia to create some classic Mode sounds and sequences, including that kick drum sound.

It's important to note that technology was limited in the '80s, so forget most of the functionality in your DAW as we're also going to emulate the sequencing back then – an ARP 1601 capable of delivering just 16 steps. So let's go back in time and engage 'classic Mode'.

Peter Noble/Redferns

Depeche Mode

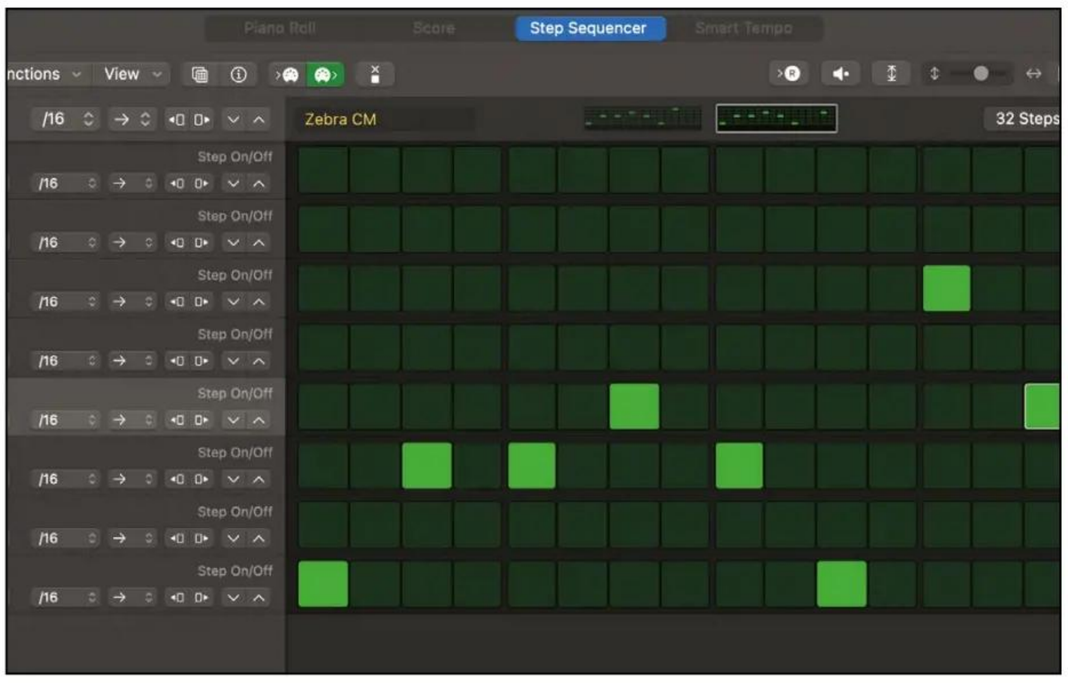
Formed in 1980, Depeche Mode have since become one of the biggest bands in the world. Now just a duo of Martin Gore and Dave Gahan, after founding member Andy Fletcher passed away last year, the Mode have become synonymous with their use of synths and sampling over the last four decades. Gore now owns one of the biggest hardware synth collections, and we'd bet he rarely uses softsynths...

> Step by step 1. Mode basslines in Zebra CM

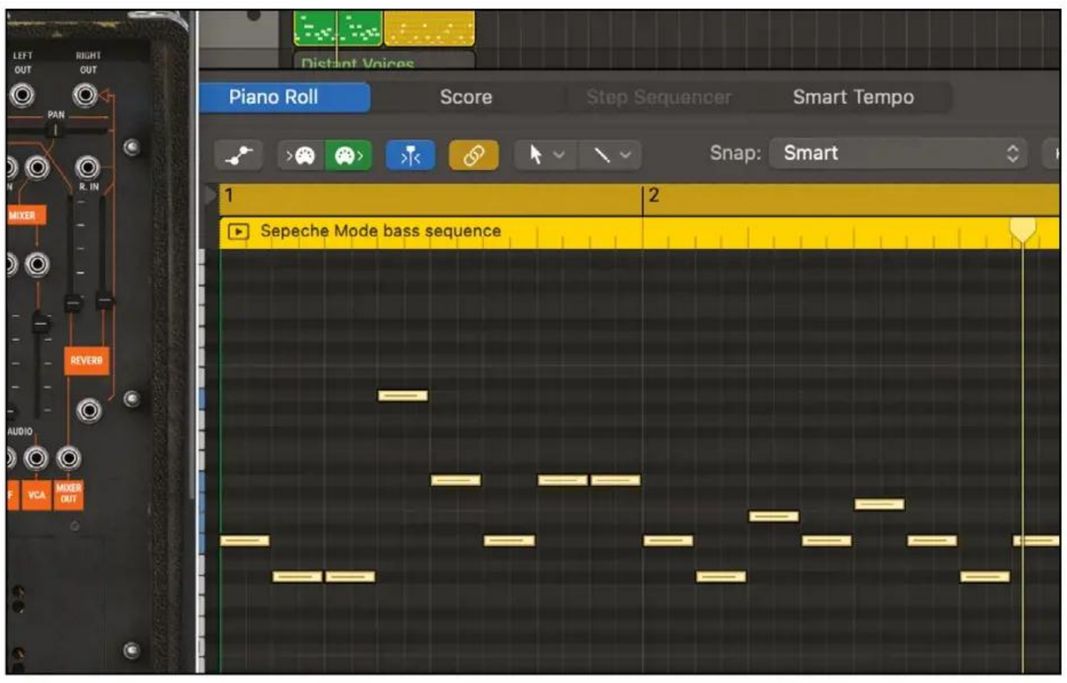
1 > We'll start our bass sequences using our very own Zebra CM synth, which is easily capable of delivering bass sounds from the early '80s; if anything you'll need to dial back on its sound to make it simpler. First load in a patch called Pluck Lead, a nicely rounded sound, ideal for a bass sequence when played low.

2 > We're going for a bass sequence vibe from second Mode album, *A Broken Frame*, when those simple analogue synths were still being used, so we'll dial back on the complex waveforms. Pull Oscillator 1 (drag and click down) back to Waveform 1 and Oscillator 2 to Waveform 1 or 3.00. The sound is now even rounder and more mellow.

3 > To more subtly mimic the early '80s analogue vibe, tweak the filters of both oscillators – Osc1 in particular. Here we've edged the filter on this oscillator down marginally to a value of -22.00 and the sound is becoming even more Mode-like.



4 > Now to emulate that 16-step ARP 1601 sequencer. Load up Logic's step sequencer, set your tempo to 130 and draw in a sequence of notes – use just 16 cycling around. Here we are using two blocks of eight in the Logic Step Sequencer. **Audio: 1. DM-a-like sequence.wav**

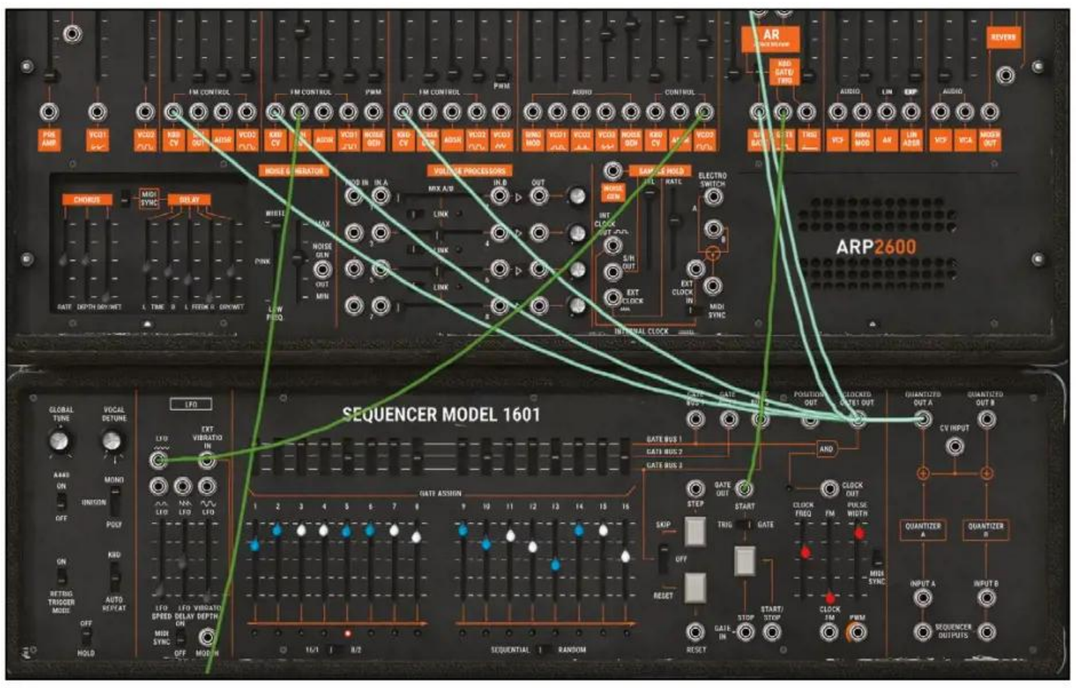


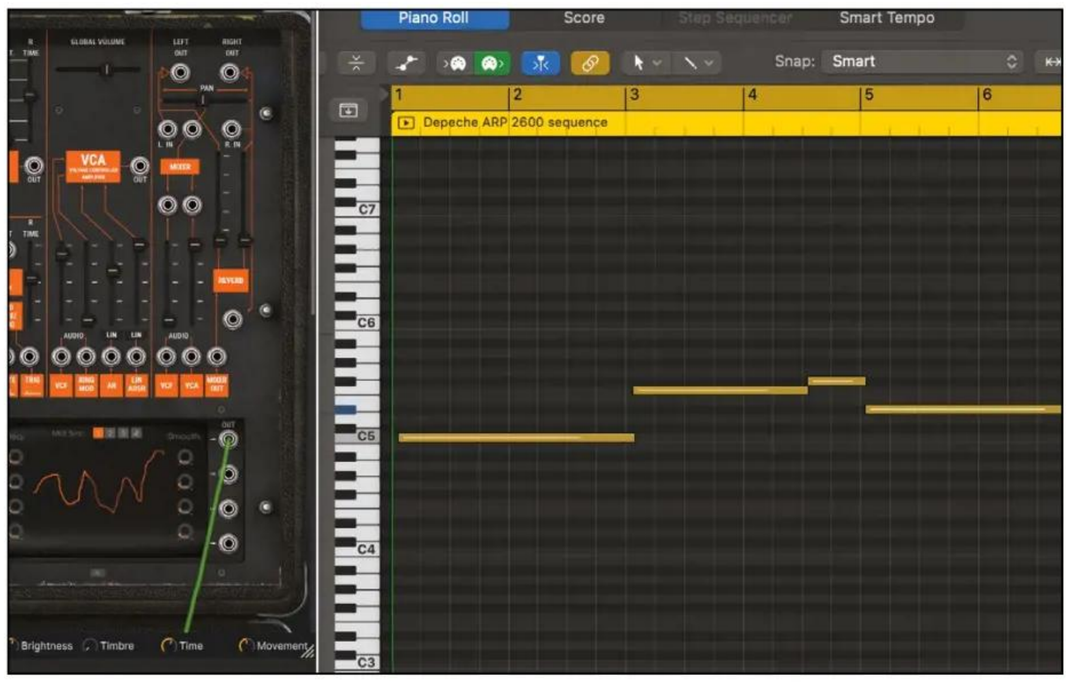
5 > If you don't want to use the step sequencer, it's easy just to draw in the notes using a piano editor. Here we've drawn in a similar set of notes to the opening riff on early Mode track *See You*. **Audio: 2.See You-like sequence.wav**

6 > We've doubled the number of steps to 16/bar and pulled the tempo back to 100. This time we're triggering the preset 'SM a bass MW' and tweaking the filter for Osc2 to get the bassline from the Aggro Mix of never *Never Let Me Down Again* (the original of which features in *The Last Of Us*). **Audio: 3. DM Aggro Bass.wav**

> Step by step

2. Why the ARP 2600 is the most widely used Depeche Mode synth



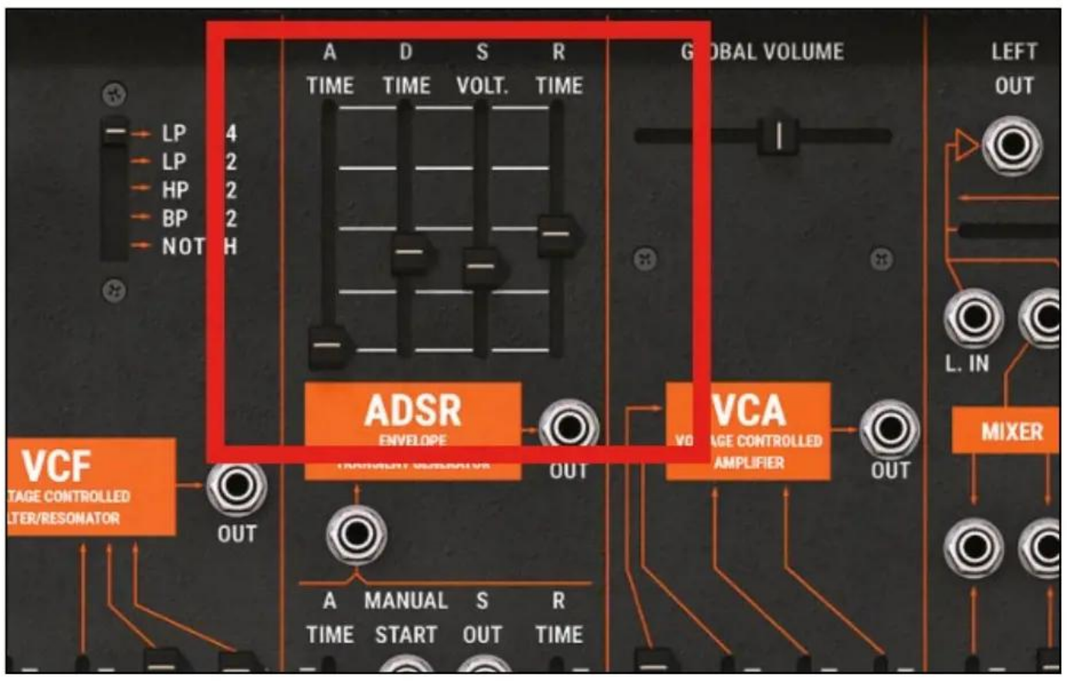


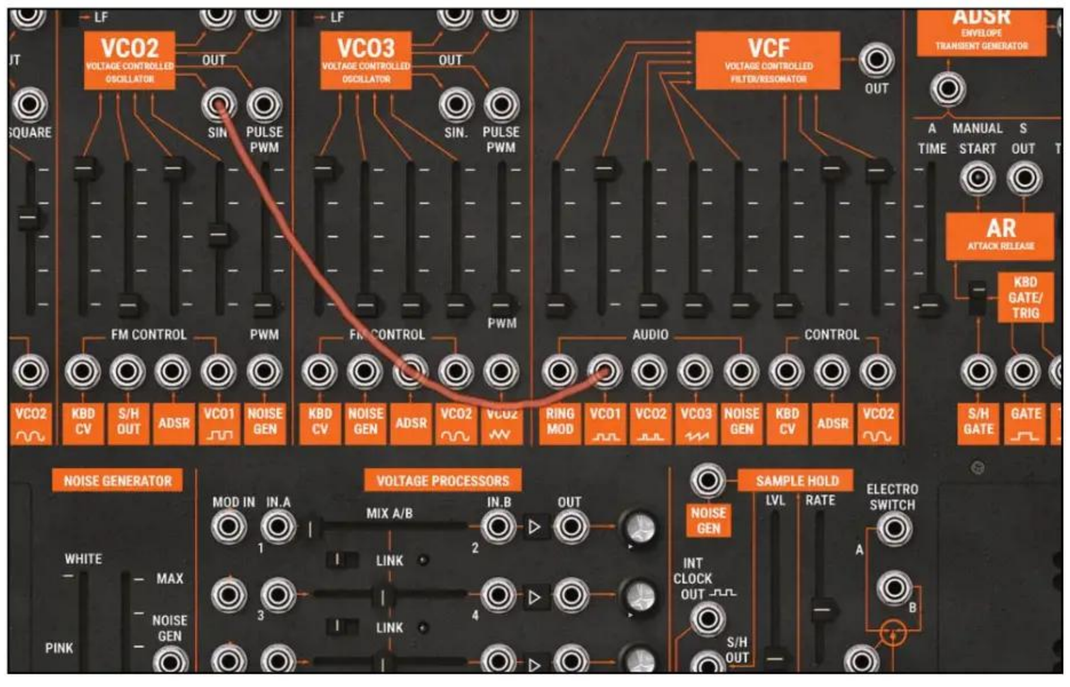
1 > If you're lucky enough to own an emulation of the ARP 2600 in software, your Depeche dreams can come true even quicker. There are some great ones out there from Arturia and Cherry Audio. We've opted for the former with the ARP 2600 V, a great emulation, not least because it comes with a 1601 built-in and loads of sequencer presets.

2 > We'll use one of these now. Go for a major to minor key change (for the sad/dark Depeche-like progressions) and simply draw in a note sequence, triggering a sequencer preset like 'Iwik', which not only gives you notes but a percussive element, more evident on later Depeche tracks. **Audio: 4. ARP 2600 rhythmic sequence.wav**

3 > Now copy the part you've just created to a new track and pair it with a bassier sound like the Sequence Gated preset. The bass and lead complement one another and veer a little towards Jean Michel Jarre – but then he (probably) used the same type of sequencer! **Audio: 5. ARP 2600 sequence with bass.wav**

4 > Load up the X Drum Sequence preset and you'll hear a more rhythmic side of the ARP, something Depeche explored a lot with their albums. Now we'll take that further and use the ARP to create a kick drum sound. Start by selecting an oscillator and tune it low as shown. We need the frequency low to hear the kick's power.





5 > The shape of the kick drum sound is very important – you want a short Attack value for kick impact and the Decay value (here around 48ms) can very much determine the pitch of the kick, as can the Sustain (here it's set to 0.37).

6 > Route the oscillator to the filter which gives you more control over the shape and tone of the kick drum (particularly with the Resonance control) so you can shape your kick drum to perfection. **Audio: 6. ARP kicks.wav**

PRO TIP

LESS IS MORE

One thing we've learned after spending years making music is that one rule to often follow is 'less is more'. Use less volume, fewer effects, fewer tracks and less clutter and your tracks will usually benefit. With early Depeche Mode tracks 'more' wasn't really an option because of the limited technology of the time, so they were limited to 16 steps in a sequence, fewer tracks to record to tape with and, of course, a limited sound palette. This didn't hold them back though, and some of the most memorable songs in synth pop were recorded within these limitations – and are all the better for it. So to emulate classic recordings, you'll have to simulate these limitations. That means keeping track counts to eight or 16, using effects sparingly and making sure that the sounds you do employ stand tall and work well with one another. We all know that the tyranny of choice and plugin bloat for computer musicians can become real issues, so sometimes it pays to just pretend like it's still 1981, embrace our restrictions and concentrate on writing fabulous songs instead...

Martin Gore performs in Belgium in 1985 on a DX7

Gie Knaeps/Getty Images

In concert in New York at the Barclays Center in 2018

Taylor Hill/Getty Images

RECOMMENDED LISTENING

DEPECHE MODE
SEE YOU
Yes, we have borrowed a little from this classic early Mode track here, but it demonstrates not only the power of a 16-step sequence, but some great custom percussion sounds too.
bit.ly/dm_cu

DEPECHE MODE
NEVER LET ME DOWN AGAIN (AGGRO MIX)
The original has now found fame as it was used brilliantly in the series *The Last Of Us*. This is the Aggro Mix that makes great use of the 16-step techno sequence, recreated.
bit.ly/dm_never

Free 3000+ samples!

We're giving you an amazing 12 packs of samples created by sample gurus Cyclick and Groove Criminals. Here they detail how the packs were created

Noir Music

First we are travelling north to the frozen wastes of Scandinavia to cash in on the success of a whole genre of dark and twisted murder mysteries. Both of our sampling experts, Groove Criminals and Cyclick Samples, came up with packs of evocative soundscapes inspired by the north. And murder. Those who kill? Those who sample, more like. Here's Robbie from Cyclick on his matching pair of Noirs...

"These two sample packs have been created to conjure the tense, brooding soundscapes of the modern noir, as perfected by the many series produced in Scandinavia. The raw winds, icy cold and melancholic rain were, somewhat painfully, kept in mind as the musical and atmospheric samples were created."

On Noir Music he says: "Pianos, guitars, a Mellotron, a splash of synths and a smattering of drums make up the looped lines folder which spans across four tempos. The A-D suffixes indicate lines that were created together. Some of the drum hits were sampled off as beats were made, while the Mellotron, guitars and pianos were put to use to make a set of one-shot chord hits. These have the chord names in their filenames for the curious, but most are some form of minor or diminished with any major component offset with a few minor ones – can't get too hopeful... it's noir!"

Noir Atmosphere

Turning his attention to his second Noir pack, Robbie from Cyclick adds the following detail...

"Strings, pianos and a Mellotron (the Arturia one) were put to good/bad use with tons of reverb, compression (to keep things level) and various other flavours (definitely the Eventide H949) to put together a set of eery, haunting and often quite nasty loops and string one shots to summon up those wintry northern European atmospherics. Note: the loops in this section are made to be seamless so the start and end points may clip if played as a one shot, so just add a fade in/out to the first/last instance or use a little attack/release if dropped into a sampler."

SELECTED STUFF USED

SOFTWARE
Arturia V Collection
Steinberg Nuendo 11
UAD plugins
Eventide plugins
Soundtoys plugins
iZotope N2/O8 and Neoverb plugins
IK Multimedia Amplitube 5
NI Kontakt 5
LiquidSonics Seventh Heaven Pro
FabFilter Volcano 3 and Timeless 3

GUITARS
Gretsch Electromatic G5122
Squier Jazzmaster Vintage Modified
Musicman Stingray bass (1977)
Danelectro Dano '63 baritone
Focusrite ISA 828 preamps

Now we celebrate the synthesiser – or samples of it – decade by decade as our experts present some superb synth samples. Here are the '80s and '90s...

The 1980s by Cyclick

Robbie from Cyclick on his 1980s samples and a decade where the synth went 'pop'...

"The 1980s was awash with synths, and digital processing was providing endless new sonic possibilities. With this in mind, the synths used for this sample pack are all period specific, as in models that were introduced in the 1980s. These include the Yamaha DX7, Casio CZ, CMI/Fairlight, Synclavier II, Prophet-5VS and Roland Jupiter-8. On the processing side, the reverbs were kept to AMS and Lexicon and everything running to virtual tape (UAD Studer A800). The lines are split into instrument types (poly, pad, lead and bass) with some providing one-shot chord hits and four octave multisamples.

"The multisamples (mostly) run from C1 to C5 and have their sustain loop points embedded into the WAV file for easy transportation into samplers. A set of SFZ files are also included to save any manual key mapping. All multisamples are run with four even-spaced notes per octave (C, D#, F# and A)."

SOFTWARE USED

Steinberg Nuendo 11

Arturia V Collection Synths and MELLO-FI plugin

iZotope RX 9 Advanced

UAD plugins

Eventide plugins

Soundtoys plugins

iZotope Neutron 2/Ozone 8

The 1990s Grooves

Groove Criminals complete our time travel sample journey by hitching a ride in an old Vauxhall from the 1990s. Here's Oli...

"This sample pack has echoes of acid house, rave, jungle, house and techno. Although perhaps not as iconic as some of the synths released in the '70s or '80s, we've chosen a handful of the classic machines released in the decade.

"On the software side, Korg's M1 is stacked with all of the ROM cards that were available as extras (without the hassle) and sounds fantastic. Hardware-wise the Access Virus B is a classic virtual analogue module and one we still turn to for lush pads or punchy basses. It's got an in-built arpeggiator and some very '90s but usable on-board effects. The Novation Super Bass Station, a rack-mount analogue mono synth released in 1997, kick-started the return to true analogue synthesis after a decade or more of digital rule (alongside its earlier small keyboard brother).

"We finish with loops and sounds from the Quasimidi TechnoX, a very '90s-style rompler which really characterises the vibe of the decade."

SELECTED GEAR USED

Access Virus B

Korg M1 softsynth

Novation Super Bass Station rack

Quasimidi TechnoX

Your free samples (cont)

Now we bring our synth history right up to date with several new sample packs celebrating C21. Here we have the hard and soft options

C21 Hard Synths

Oli from Groove Criminals details his two synth packs which are neatly divided by hardware and software...

"We've concentrated on a few synths that we love: Korg Volcas, TE Pocket Operators, Behringer reissues, Arturia Microfreak, to name a few.

"Sadly the Prophet Rev 2 is only on loan to us but it's a lovely modern polysynth with a proud history. We love the ease of modulating any of the controls: everything from spiky rhythmic percussion sequences to lush moving pads. We love the Mother 32 and Monologue monosynths for their powerful sound and quirky nature. The Mother 32 with its extensive semi-modular patchbay easily talks to our Eurorack/CV setup. For modern synths there's our Soma Lyra-8: eight voices, paired in four groups of two and played using touch contacts rather than a keyboard, it's a drone/noise/strange texture machine and we love it. We've also included a few textures fed through a Moogerfooger LPF with various expression inputs being controlled by the OBNE Expression ramper."

GEAR USED

Sequential Prophet REV2
Korg Monologue
Moog Mother 32
Roland TR-8
Soma Lyra-8
Moog Moogerfooger LPF
Old Blood Noise Endeavors Expression Ramper

C21 Soft Synths

Oli from Groove Criminals now turns to the soft side with our second pack of 21st century synth samples...

"To pair with our 21st Century hardware synths sample pack, we have the software synth version! The last couple of decades have been just as kind to lovers of software synths as it has to hardware fans.

"Although there have been hundreds of great softsynths releases since 2000 (and we regularly use dozens of them), we have chosen arguably (in our personal opinion) two of the most influential, Native Instruments' Massive and Xfer Records' mighty Serum.

"Both of these softsynths have their fingerprints on several genres of electronic music and we love the modulation options and workflows on both, as well as the distinct differences."

"Massive has the samples arranged by atmospheres, FX, loops and pads while Serum has drones, effects and loops. There's also a Multis folder with eight multisample setups."

SELECTED GEAR USED

NI Massive (V1)
Xfer Records Serum

Now we turn our attention to beats with two packs of samples celebrating the drum machine for all the beats you need in your music productions

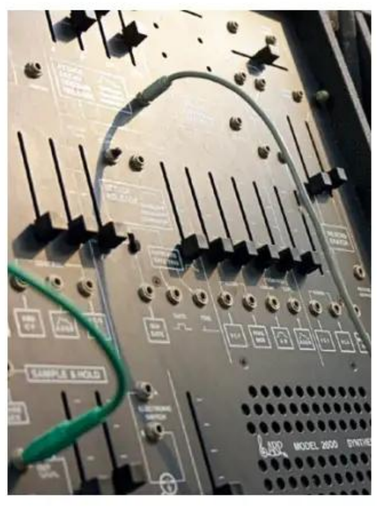
Cyclick Drum Machines

Cyclick Samples beat us to it with their drum puns and produce our first pack of drum machines samples...

"This sample pack has six kits of modelled analogue, synth-generated drum sounds. The seven components per kit have been hand/trackpad-carved from VA synths: the Modular, Synthi, SEM and ARP 2600 from the Arturia V Collection and the GForce OB-E. These were levelled and processed with an EQ, compressor and transient shaper. Each drum machine was sent to a pair of group buses for further compression, EQ, reverb, saturation, plus an exciter and limiter. The resulting loops are spread across seven tempos and each kit contributes a main beat and an alt mix through the second bus per tempo.

"The six drum kits are available as individual one-shot hits. There are multiples of most as the synths were programmed to have some movement in their VCAs and VCFs.

"This can be a long-winded way to create drum machines, but it is rewarding. And having made this, there are more Cyclick drum presets in the various synths used to revisit another day."



SELECTED GEAR

Arturia V Collection
GForce OB-E
Steinberg Nuendo 11
UAD plugins
Soundtoys plugins
Eventide plugins
iZotope Neutron 2 & Ozone 8
Sonic Seventh Heaven Pro

Drum Machine Grooves

Oli Bell from Groove Criminals is also getting his drum machines to rock for this pack of samples...

"We're very lucky here at GCHQ to have a collection of drum machines of all ages, and we raided them for some unusual examples.

"On the analogue front we have three machines that predate MIDI or programmable patterns. The EHX Rhythm-12 which dates from the late '70s has 12 presets, a tempo control and four sounds (that's your lot!). The Bentley Rhythm Ace has more and you can trigger more than one pattern which throws up some nice combos. Then the Korg Rhythm 55 has more presets and a lovely tone. The tempos for the loops for these boxes is roughly correct but all three fluctuate a bit, so be aware.

"To contrast, we also chose three digital boxes from the '80s onwards. The Alesis HR16-B has more electronic-based sounds with pitch and pan. More drum expander than classic drum machine, the Dynacord P20 is a large beast with six channels. Finally the Korg DDM-110 is a late '80s bargain machine with 8-bit drum samples and that lo-fi sampled drum sound of the era."

SELECTED GEAR

Dynacord P-20
Korg Rhythm 55
Bentley Rhythm Ace
Electro Harmonix Rhythm-12
Alesis HR-16B
Korg DDM-110
OBNE Minim
Arturia Beatstep Pro

Your free samples (cont)

Now we get deep, down and dirty with two packs of analogue inspired samples to filth up your pristine digital productions in Logic...

Cyclick Dirt

Cyclick Samples put together this pack of dirt samples. Here's what Rob says of his creations...

"Dirt, scum, fuzz, filth, scuz, call it what you will; in the end it's all distortion. So here is a sample pack of distorted loops and one-shots to bring an instant dose of adulterated noise to proceedings. The distortion has all been generated with analogue devices, mostly stompboxes along with the trusty Culture Rooster. Sources were reamped through chains of pedals or via the mono Mixing Link which also ended in the WEM Custom Copicat tape echo from 1965.

"No two loops were allowed to use the same settings and pedals were swapped out in case the dirt became too similar. The only settings were used for the chord one-shots, which feature three classic keyboards (courtesy of the excellent Arturia V Collection) beaten up by transistors, transformers, valves/tubes, diodes and magnetic tape. The Nasty Guitar folder was done by plugging a Gretsch guitar into the Eventide Mixing Link chain, with feedback that occurred via the monitors. Drum hits were also collected as drum loops were created."

DISTORTION GEAR USED

Boss SD-1 & GE-7

Fender The Pelt Fuzz

UA Starlight Echo Station

Korg CMP-1 Compressor

Fuzzdog Bass BrassMaster

WEM Custom Copicat valve tape echo

Dreadbox Komorebi

Sandpit NKT214 Germanium Fuzz Keeley Fuzz Bender

Dr No Octofuzz

Danelectro Spring King

TC Hall of Fame/Viscous Vibe

Kokko Overdrive

Groovy Filth

Oli Bell from Groove Criminals is also getting deep, down and...

"We're getting grubby with a covering of analogue dirt! We've started with some filthy acid basslines that we've smeared in fuzz from a selection of our favourite fuzz pedals. We've included dry loops as well and tried (not successfully) to dial the destruction down to subtle(ish) levels.

"We ran beats through a few of our trusted dirt plugins. These include saturation emulators for some tape/vintage/cheap preamp goodness and Waves' excellent Lofi which has lots of options for adding dirt and noise to a signal. Our favourite plugin, and part of our secret sauce is AudioThing's Wires. Developed with Hainbach, it's an emulation of a Soviet wire recorder and brings beautiful grime to anything.

"We put the Korg Triton piano through the Mid-fi Scrape Flutter, an envelope controlled vibrato that really adds unpredictable oddness. Lastly we've included a healthy stack of dirty layers: tape noise, vinyl crackle and various types of hum and even some digital noise."

OTHER GEAR USED

Catalinbread Antichthon

DBA Robot Clone

Bluff Chill Robodog

Raygun Youth Chaos Fuzz clone

Corruptor fuzz clone

Fostex portable turntable

Various cassette players

MeldaProduction MSaturator

ToneBoosters Ferox and TimeMachine

FXpansion Maul

We've had synths, ambience and beats so here, completing your collection of free samples, are two bass backs. Get ready to go low

Tough Bassics

The first of our gritty bass collections was honed by Cyclick Samples. Here's Robbie to tell us more about it...

"Roughness can also be expressed as a lack of smoothness, and the bass sounds created for this sample pack are proudly just this! Analogue amplification stages have been grossly overloaded and a variety of fuzzes and distortions employed to bring the grit, dirt and nastiness. To many ears this may be no bad thing; I loved every second of generating this sandpaper bass collection. Each of the five main bass setups has been used to create a set of loops across eight tempos and have been captured as a set of seven multisamples. The seventh multisample is a variant of the Teisco short scale bass and Mutron III. The latter's setting were regularly switched between bassline takes and the two best were noted for multisample creation, a low-pass filter and a band-pass filter setting."

SELECTED GEAR

Squier Precision bass (Classic Vibe 70s)

Epiphone Ripper bass

Musicman Stingray bass (1977)

Teisco short scale bass

Loads of pedals including Electro-Harmonix, Moog, Sandpit, Musitronics, Dreadbox and many more

Rough Bass Grooves

Keeping the theme rough and tough, Oli Bell from Groove Criminals details his collection of dirty bass samples...

"It's our usual routine of mixing both hardware and software to bring you some roughed up low end tones. Hardware-wise we threw our Mother 32 through the rather fab Holy Island Rorschach which is a separate spluttering fuzz and multi mode filter circuit. Each is controlled on the axis with a joystick providing hands-on audio destruction. We ran our trusty Behringer TD-3 through three of our favourite pedals to rough things up: the bonkers Catalinbread Antichthon, Bugbrand Baby Bugcrusher (a sample reducer that adds a fantastic vocal edge to the acid basslines), and Glowfly Glitchwave567 which adds fuzz and a ring mod vibe.

"On the software side we ran the usual set of softsynths through both distortion and bit crushers for that filthy, crunchy sound but also rinsed the Audiothing Wires plugin, a recreation of a Soviet-era wire recorder that brings some great ambient texture to whatever you feed it, and has been one of our go-to plugins for a while now." **cm**

SELECTED GEAR

Moog Mother 32

Korg Wavestate

Behringer TD-3

Holy Island Audio Rorschach

Catalinbread Antichthon

Bugbrand Baby Bugcrusher

Glowfly Glitchwave567

Logic Alchemy

XFer Serum

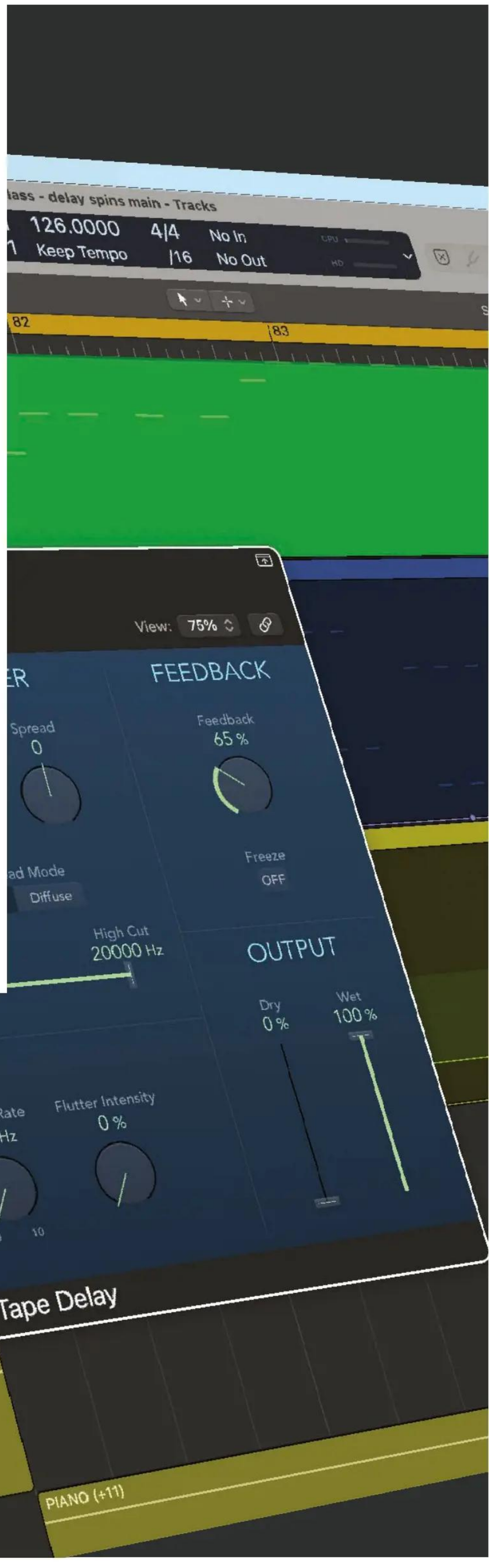
Audio Thing Wires

Audio Thing Crusher

NI Driver

Creating spin delays

Are you confused by how to approach delays in a mix? In our final Logic Masterclass we focus on a tried and tested technique



Delay is a vital aspect of most mixes and can be used in numerous ways. Rather than tackle all of these in one feature, I'll look at specific techniques, how to achieve them and where to use them. This time we're focusing on spins. Making full use of the stereo image can be an important aspect of a successful mix, and often we need to find a way to add width to mono sounds.

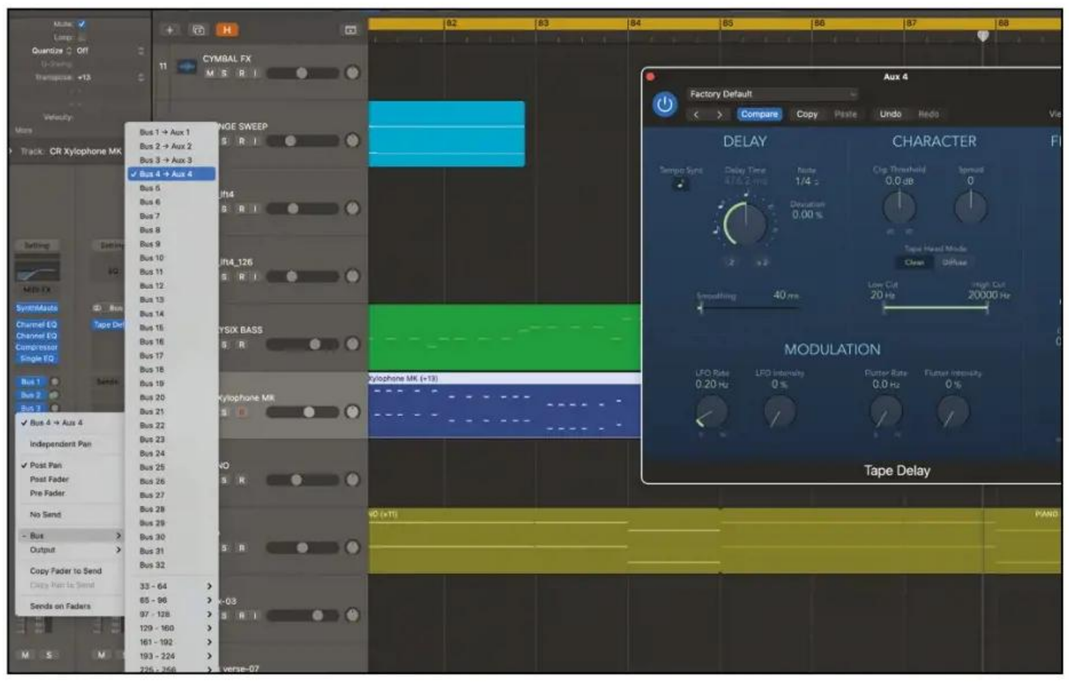
Adding spin delays is a key technique ideal for lead and featured elements and involves picking out specific snippets to add delay to. This could be certain words in a vocal or notes in a lead part, and works particularly well used at the end of phrases. It's a great device to help smooth transitions, fill gaps and can be used as a featured effect or in more subtle ways. There are a few different ways to achieve spins, including using snippets of duplicated audio and creating them manually, but the most efficient and flexible is to use an automated auxiliary send.

We can then supplement this with additional automation or even add further processing of the send and return if required. Finally, listen to most mixes and you'll hear spins working in time with the track, and many delay plugins load up already set to tempo sync.

So, in terms of timing, all you have to do is choose the division you want for your spin. That said, spins can work in free time as well, and we'll look at both options in the walkthrough.

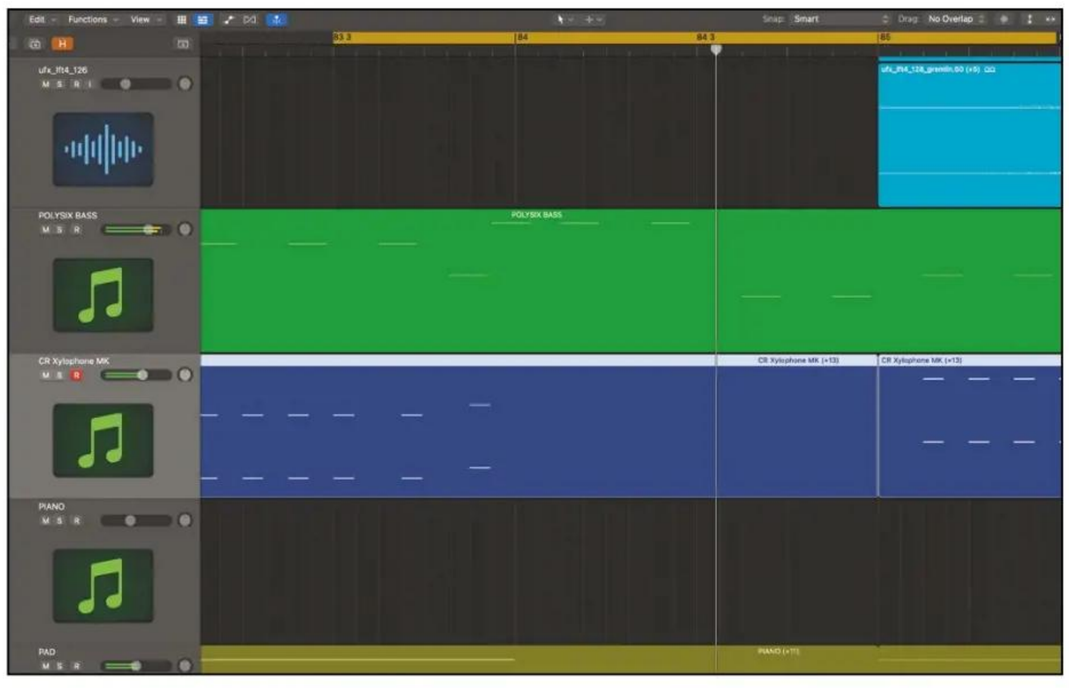
> Step by step 1. Creating spin delays

1 > There are various ways one can set up delay spins, including creating a separate track just for the parts you want to send, or even create them manually using an audio track. Here, we're going to stick to a tried and tested method using delay plugins on an auxiliary. To get started, load up a delay on an auxiliary.

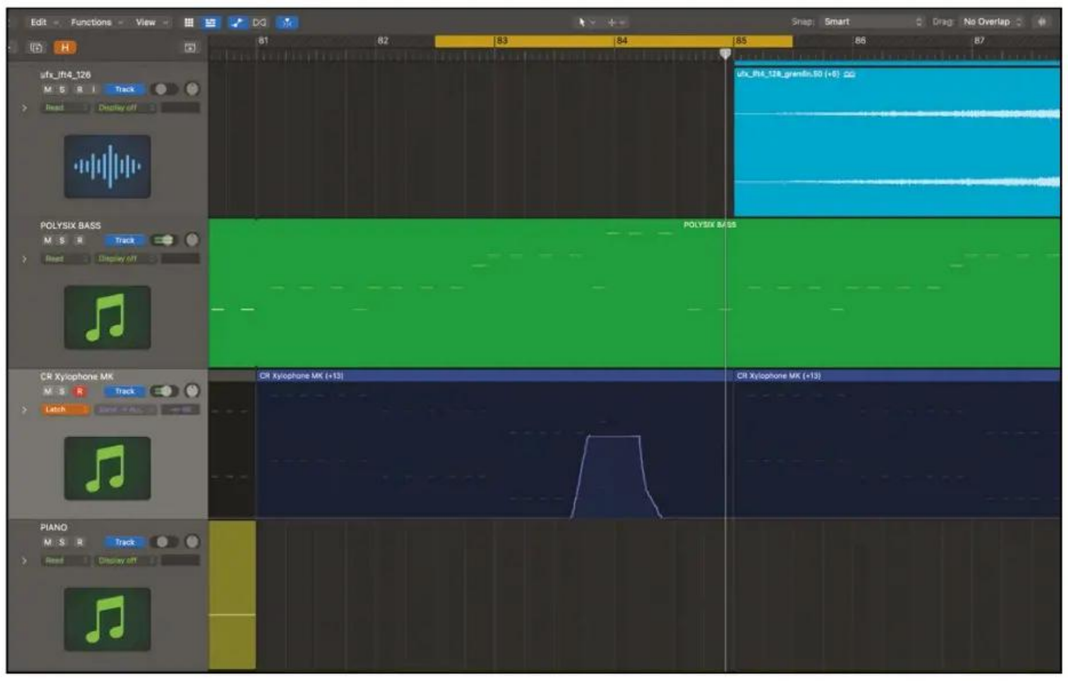


2 > On the plugin, select a tempo-synced delay (we're starting with quarter notes). Next, to test out the delay head over to the track or tracks you want to process, assign a send to the delay's auxiliary bus, and manually send a quick snippet of audio.

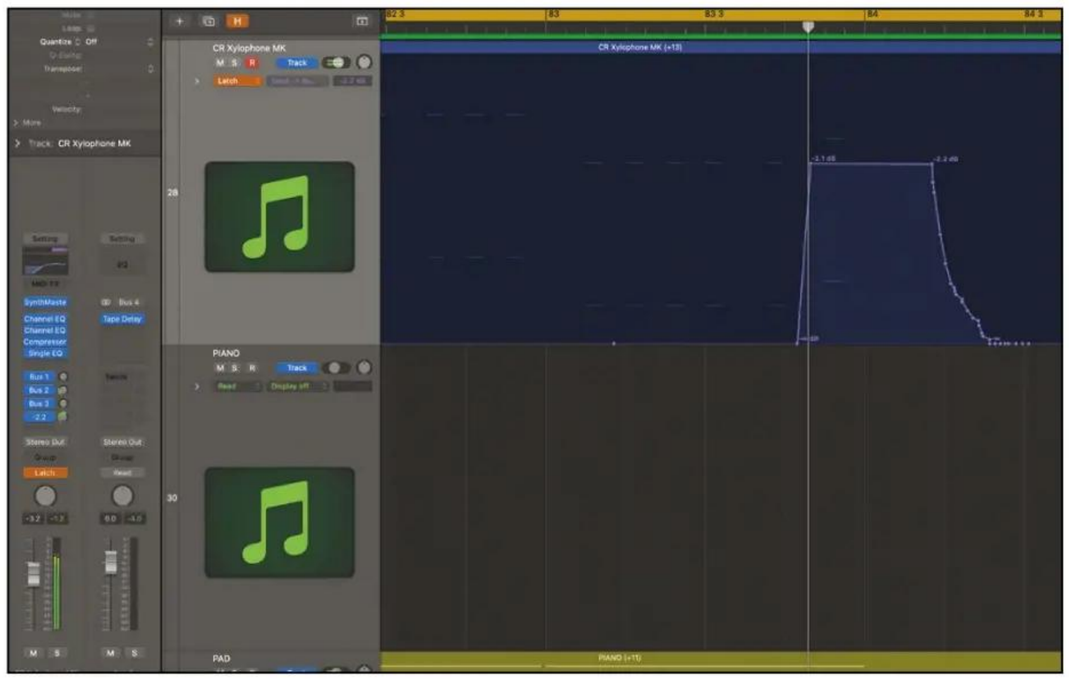
3 > This should give you a good idea of what sort of send level you're going to need, and also how much feedback. Set a low feedback setting if you just want a subtle echo. For more featured spins, as we're going for here, you'll need a higher setting (ours is on about 65%).



4 > With the delay set up, the next task is to pinpoint the sections to process. As mentioned, we typically add spins at the end of phrases to emphasise words or notes. For our example xylophone part, we've zoned in on a specific point and this is a single note at the end of the phrase.



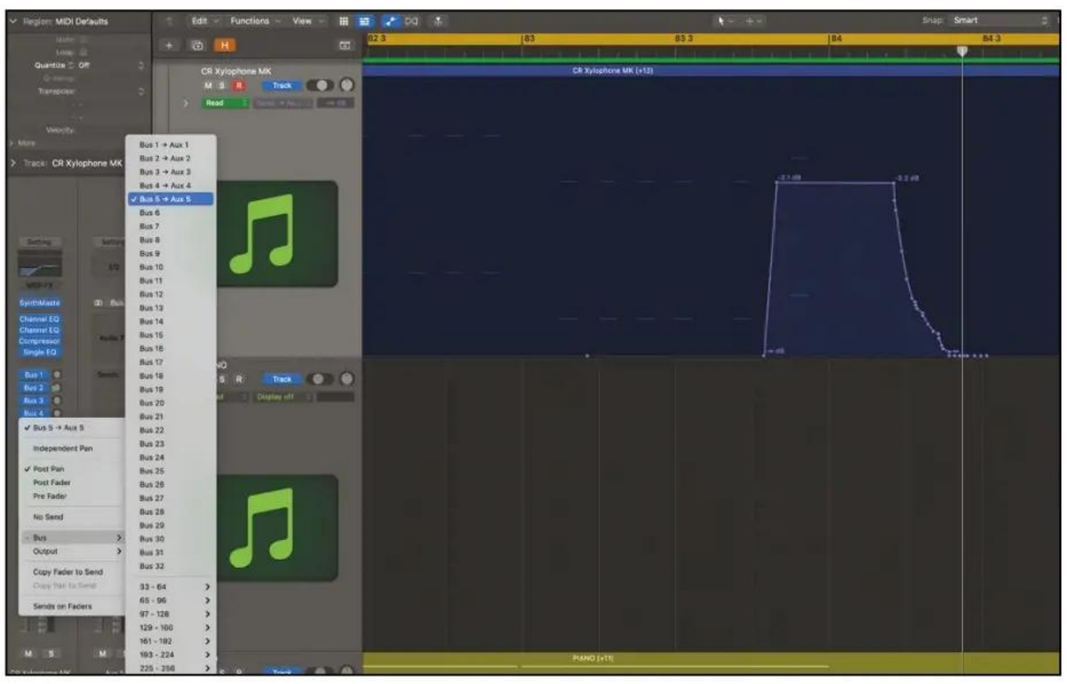
5 > Try the spins out manually by sending some level in real time. This gives a quick idea if the idea will work. If you're confident with your DAW automation you could also write these moves in at the same time. Alternatively, you could draw them in manually once you're happy with the sections.



6 > Finally, finesse the send automation. Often this only involves working on the send level. However, with vocal parts it can be more tricky, particularly if you're using a small snippet of a word rather than the whole word. Either way, try shaping the send level automation to achieve the desired outcome.

> Step by step

1. Creating spin delays *(continued)*

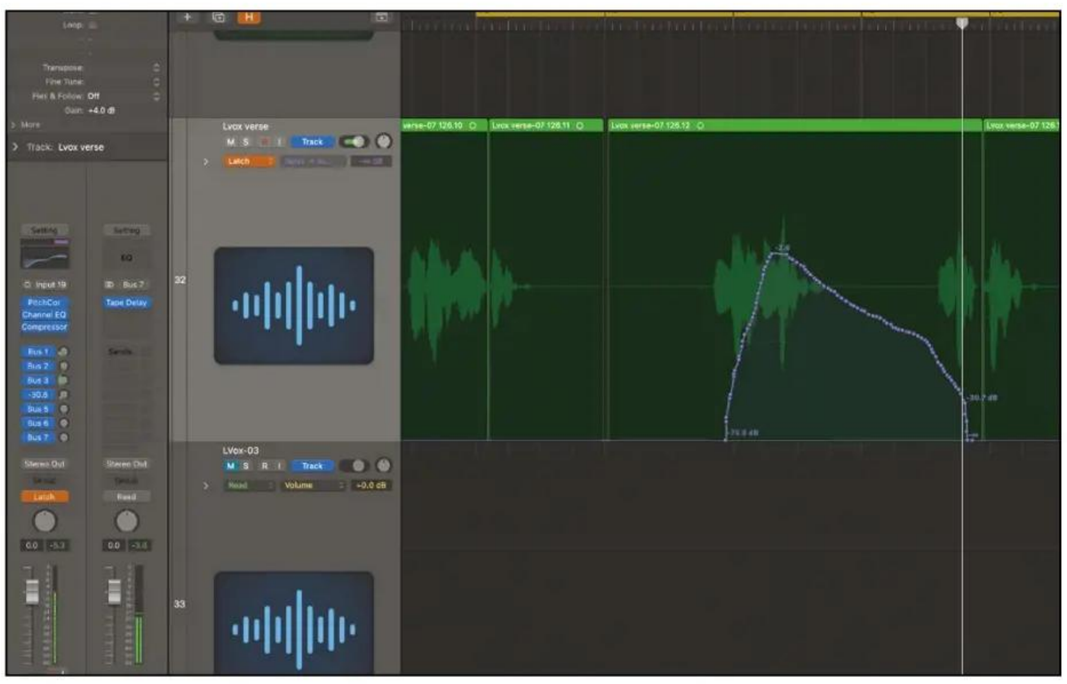


7 > As you work through potential spins, it's sometimes clear that different snippets need different delay timings, and it can work really well having targeted delay timings for specific points in the track. The easiest way to achieve this is to set up additional delays on fresh auxiliaries.

8 > In addition to quarter notes, synced delays that work well include half note or even three 16ths (a dotted eighth note), and this latter option is great when the track has a swing feel or you want to enhance that feel. Work your way through the track trying out different timings on different sections and different parts.

9 > Once again, when you're happy, commit the send levels to automation in whichever way works best for you, and finesse the automation as before. Here for our vocal we've used a mixture of quarter note and half note spins, adding them alternately at the ends of phrases.

10 > So far we've focused on tempo-synced delays, and most of the delay spins we use are tempo-synced. However, it is possible to use free time delays as well. Unsurprisingly, these don't work particularly well for longer delays. However, for shorter delays they provide a great way to create interest or fill gaps.



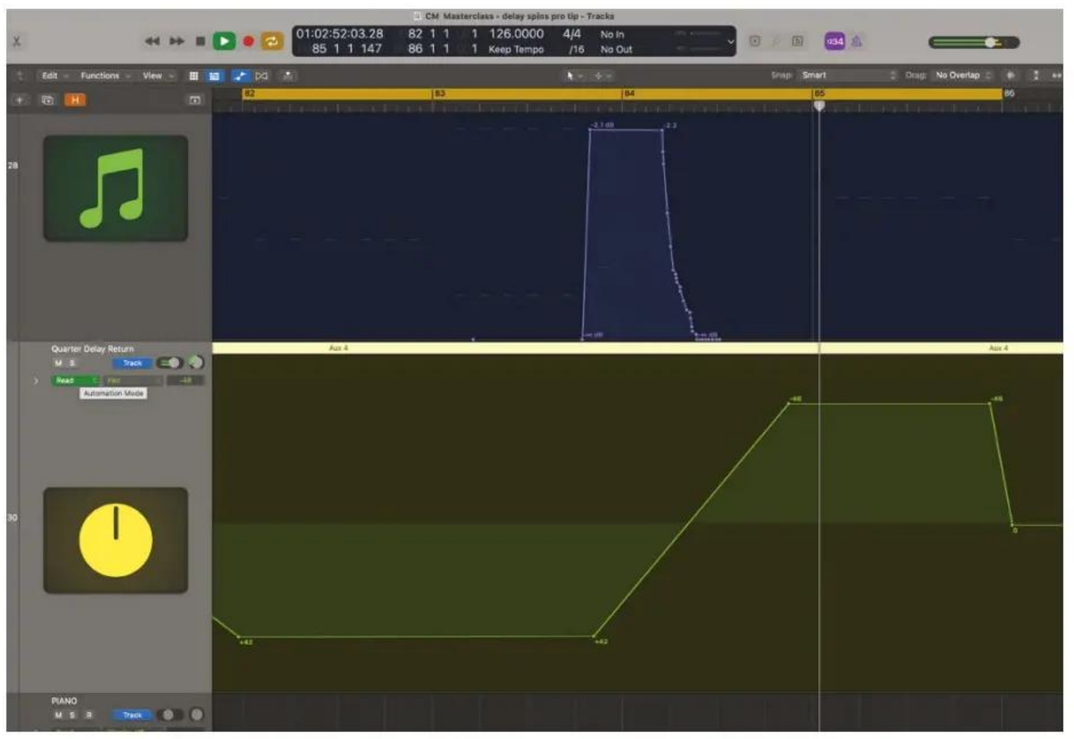
11 > The timing of the delay will roughly depend on the tempo of the track. Here the example track is at 126bpm and we've set the delay at about 210ms to start with. The plan is to create a slightly chaotic delay spin with a decent feedback level that builds quickly and then dies away quickly.

12 > Finessing this kind of effect requires a bit more automation, and on this occasion we're controlling the feedback amount and return level. This creates a fast build up of the delay, which is then ducked down quickly, and we've reduced the feedback as well to quicken the decay stage.

PRO TIP

GETTING COMPLEX

So far we've only looked at using simple echo-style delays. There are, of course, numerous ways we can modify the delay. Starting with EQing the feedback loop or even EQing the whole delay return, we can also add distortion or even stick the delay through its own reverb. However, shelving the creativity for a moment, let's look at the delay itself. One option is to add static or automated panning to the delay return, or simply use a ping pong-style delay. These options create stereo interest but can also make even more of a feature out of the delay spin. A second option is to use a synced pre-delay before the delay. This isn't quite as bonkers as it might seem, and can be achieved quite easily by inserting a delay on the auxiliary return bus before the main delay and setting its mix to maximum. For this technique to make any difference, the pre-delay must be a different length to the main delay and one option that works well is to use a quarter note pre-delay with an eighth-note spin.



Pink Floyd were early adopters of the delay spin

RECOMMENDED LISTENING

JOEL CORRY X RAYE X DAVID GUETTA
BED
This chart smash is a masterclass in modern delay spin techniques
bit.ly/cmu_joelcorry_bed

PINK FLOYD
US AND THEM
Just to show that the technique's been around forever – it's even got some panning for added interest
bit.ly/cmu_floyd

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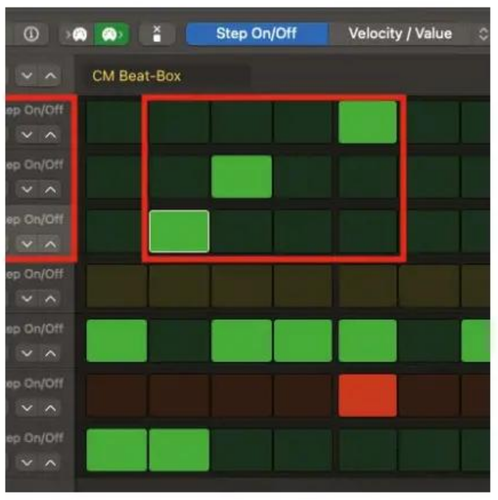

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